

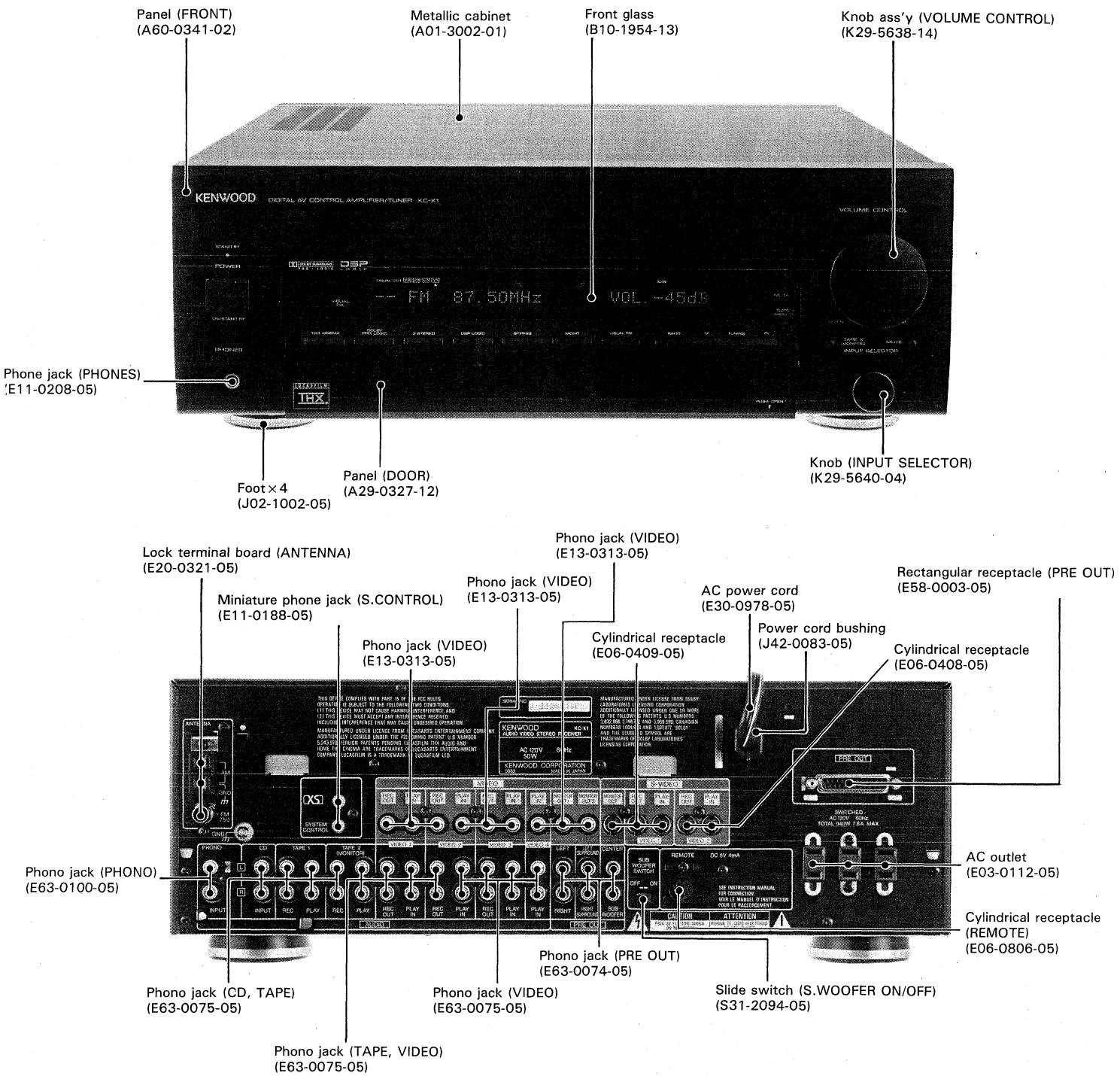
DIGITAL AV CONTROL AMPLIFIER/TUNER

KENWOOD

KC-X1

SERVICE MANUAL

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B51-4703-00 (MC) 2088

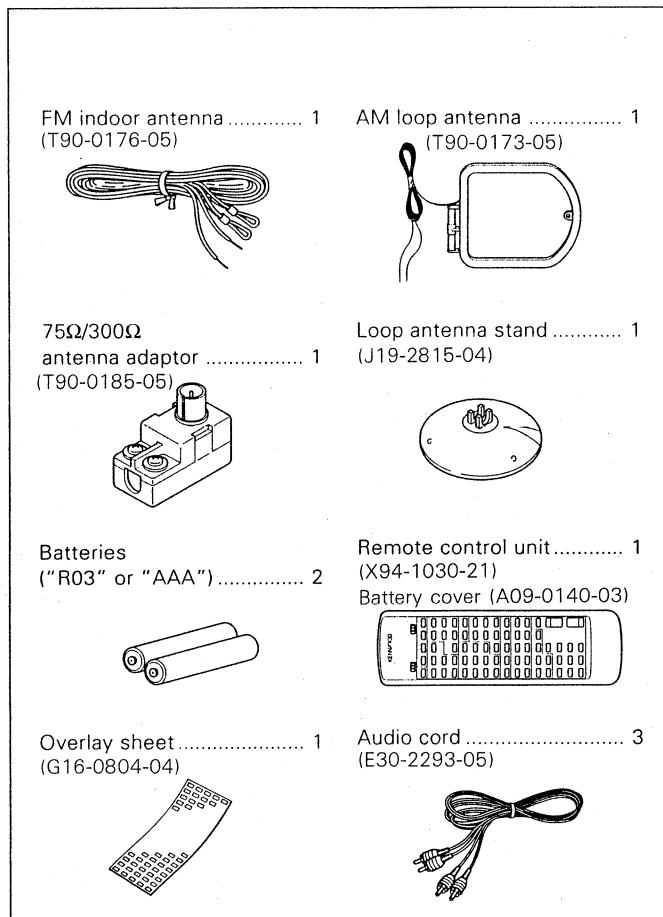


KC-X1

CONTENTS

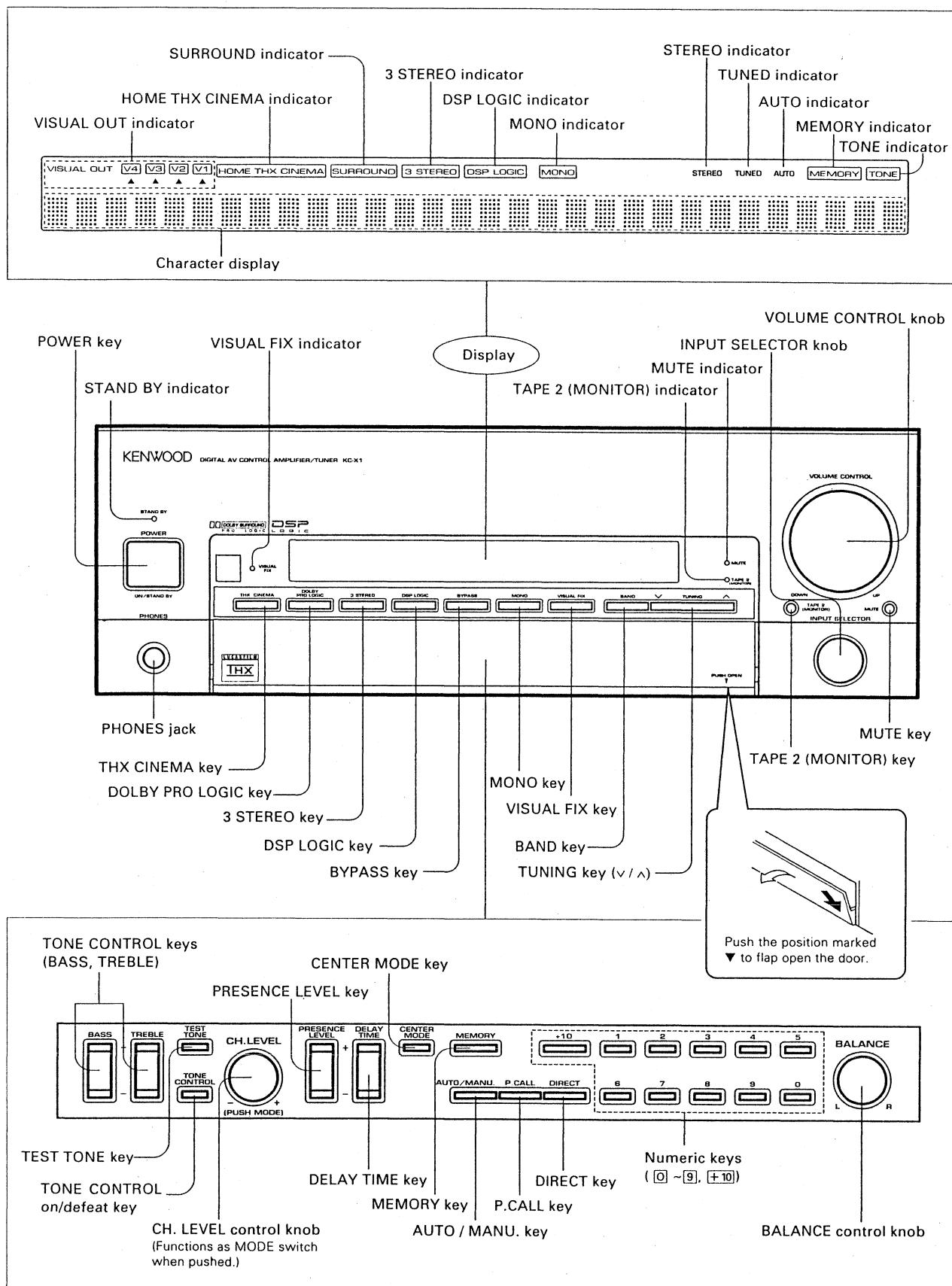
ACCESSORIES	2
CONTROLS AND INDICATORS	3
DISASSEMBLY FOR REPAIR.....	7
BLOCK DIAGRAM.....	11
CIRCUIT DESCRIPTION	
1. Outline of THX system.....	13
2. Main microprocessor μ PD78044GF-024 (X14: IC14)...	14
3. Control microprocessor μ PD78043GF-020 (X14: IC18) ..	20
4. Display control driver: LC75711E (X14: IC15, 16) ...	23
5. Control of selector IC and speaker relay.....	26
ADJUSTMENT	27
P.C. BOARD (Component side view).....	29
SCHEMATIC DIAGRAM	39
EXPLODED VIEW	67
PARTS LIST	69
SPECIFICATIONS.....	75

ACCESSORIES



KC-X1

CONTROLS AND INDICATORS

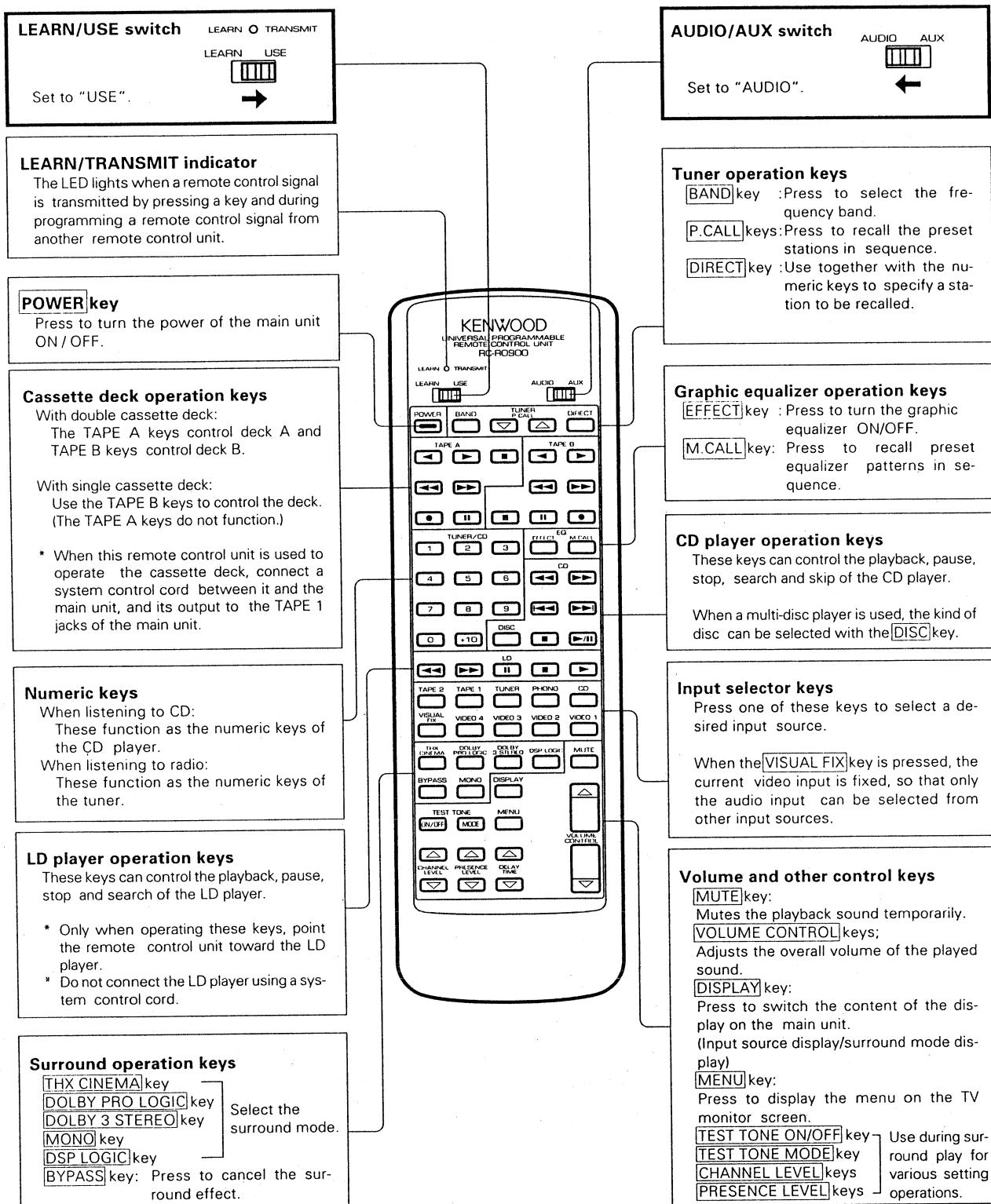


KC-X1

CONTROLS AND INDICATORS

Names and functions of remote control keys (AUDIO mode)

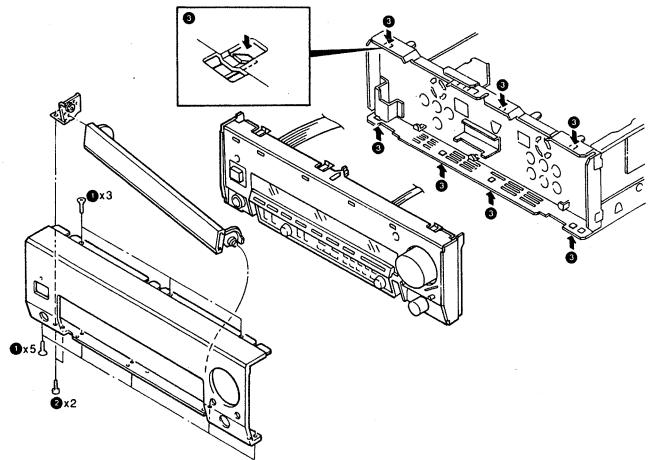
To remote control KENWOOD components connected to this unit via the system control cords, set the LEARN/USE switch and AUDIO/AUX switch as shown in the illustrations below.



DISASSEMBLY FOR REPAIR

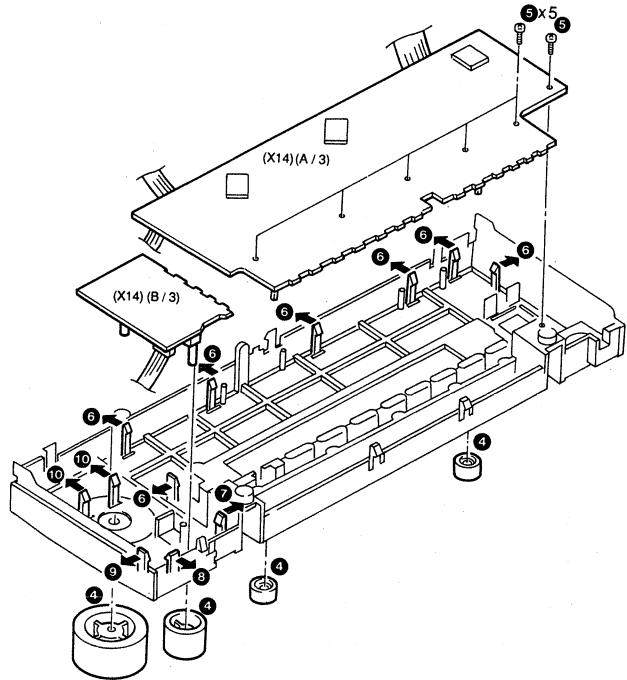
Removing the panel and panel escutcheon

1. Remove the eight screws (1), then detach the front panel.
2. Remove the two screws (2), then detach the lower door panel.
3. Detach the panel escutcheon by disengaging the seven hooks (3).



Removing the (X14) (A/3) and (X14) (B/3) boards

1. Remove the four knobs (4).
2. Remove the six screws (5).
3. Detach the FL display board (X14) (A/3) by disengaging the seven hooks (6).
4. Detach the Volume selector board (X14) (B/3) by disengaging the five hooks in order of (7), (8), (9) then (10).

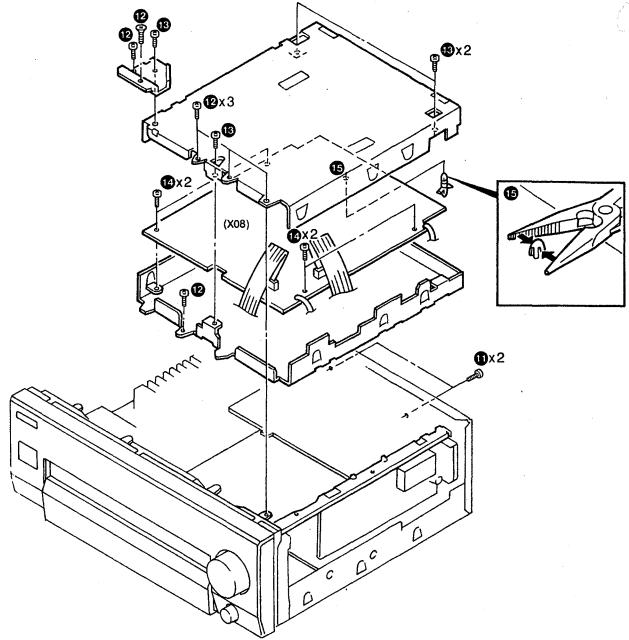


KC-X1

DISASSEMBLY FOR REPAIR

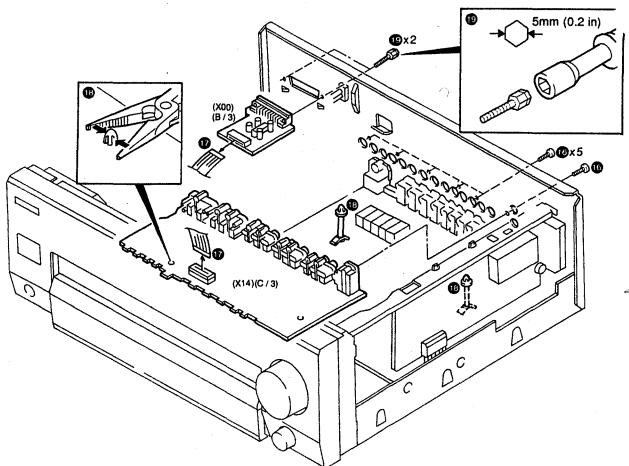
Removing the (X08) board

1. Remove the two screws (⑪).
2. Remove the six screws (⑫), then lift the shield plate.
3. Remove the four screws (⑬), then detach the shield plate reinforcing hardware and upper shield plate.
4. Remove the four screws (⑭).
5. Remove the unit holder (⑮), then detach the board (X08).



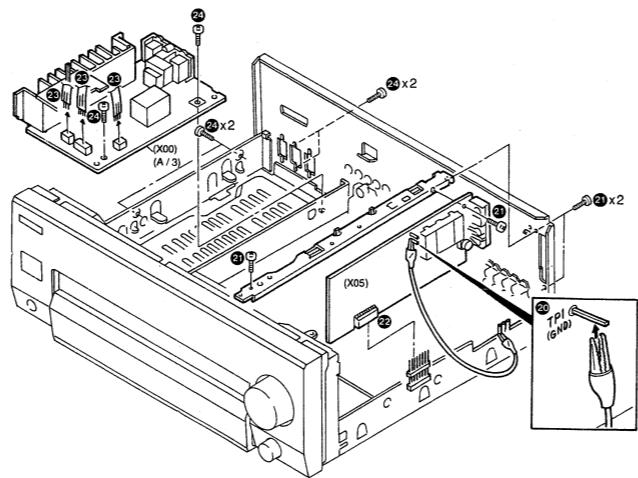
Removing the (X14) (C/3) and (X00) (B/3) boards

1. Remove the six screws (⑯).
2. Unplug the two connectors (⑰).
3. Remove the two unit holders (⑱), then detach the Video board (X14) (C/3).
4. Remove the two hex-head screws (⑲) using a box driver (→ 5 mm (0.2 in.)), then detach the DB25 terminal board (X00) (B/3).

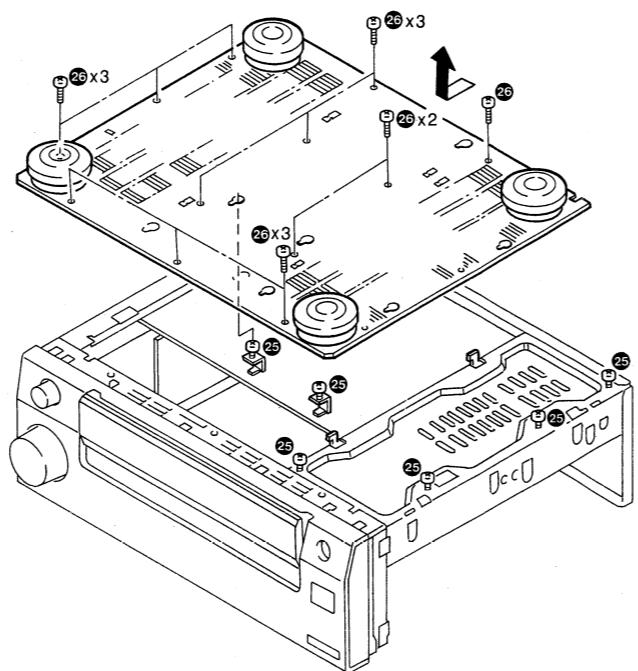


DISASSEMBLY FOR REPAIR**Removing the (X00) (A/3) and (X05) boards**

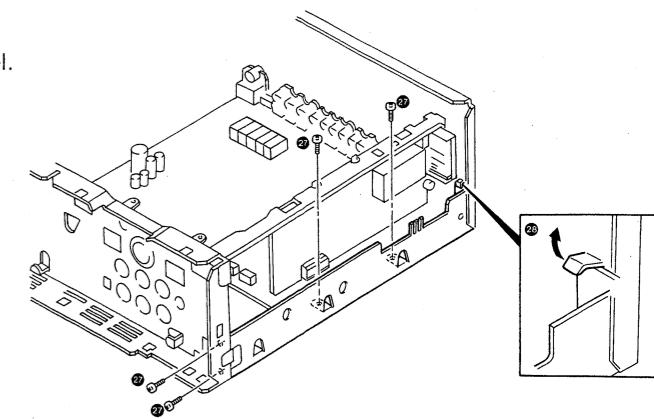
1. Attach the clips of cord to TP1 and the chassis (20).
2. Remove the four screws (21), then detach the frame.
3. Unplug the connector (22), then detach the Tuner board (X05).
4. Unplug the three connectors (23).
5. Remove the six screws (24), then detach the Power board (X00) (A/3).

**Removing the bottom panel**

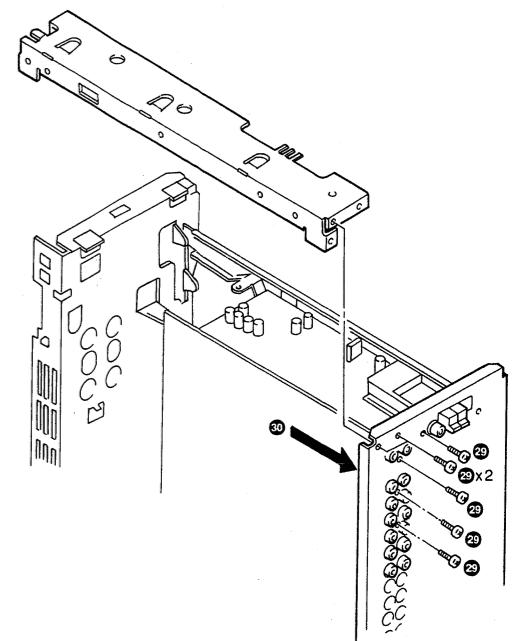
1. Loosen the six screws (25).
2. Remove the twelve screws (26), and slide the bottom panel slightly toward the front panel side.

**DISASSEMBLY FOR REPAIR****Removing the bottom right frame**

1. Remove the four screws (27).
2. Stand up the claw (28) on the bottom right of the rear panel.

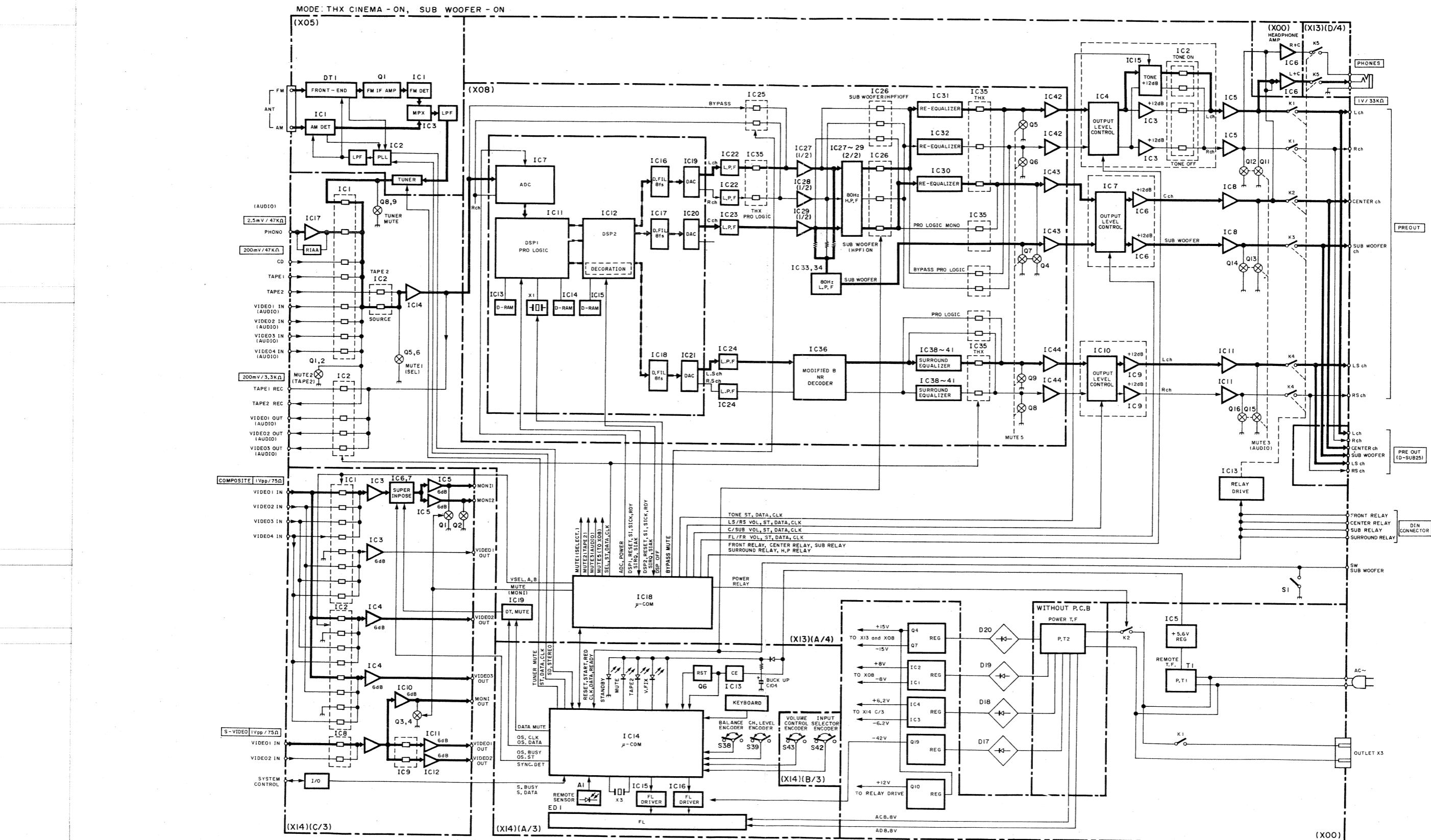


3. Place the set with the right side panel facing up, and remove the six screws (29).
4. Detach the right frame by pushing the rear panel toward the outer direction (30).



KC-X1 KC-X1

BLOCK DIAGRAM



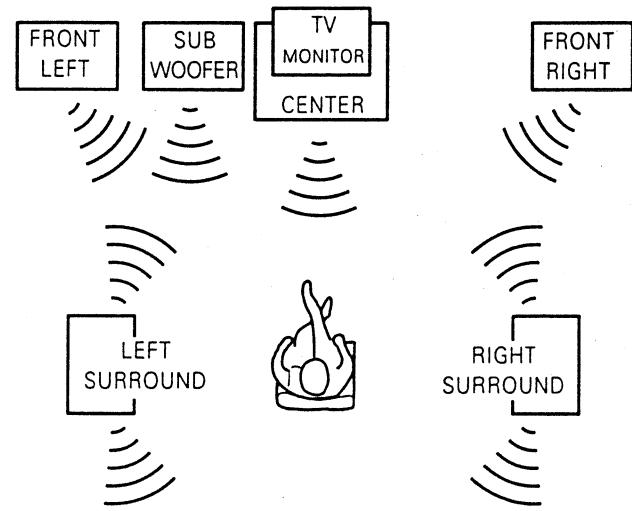
CIRCUIT DESCRIPTION

1. Outline of THX system

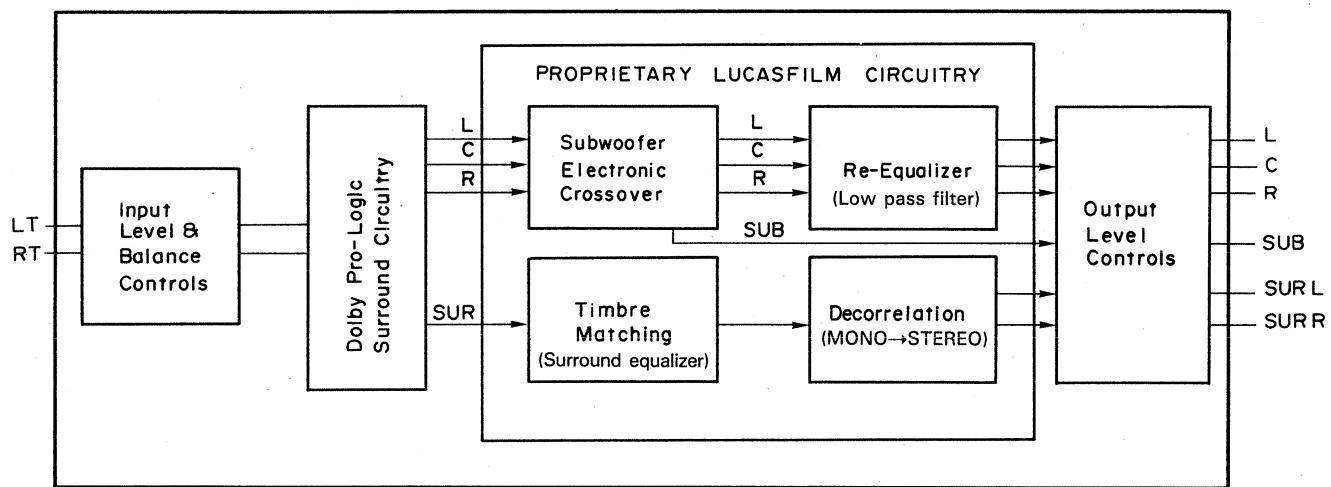
The THX system reproduces a similar Dolby Surround acoustic effect to movie theaters from a video software program carrying the  DOLBY SURROUND mark.

The differences between the THX and the Dolby Surround function are as follows:

- (1) In the video software carrying the  DOLBY SURROUND mark, the high frequencies are enhanced assuming reproduction in a large place such as movie theaters (because high frequencies tend to be attenuated in a large place due to the distance between the speakers and audience). In consequence, the THX applies re-equalization to the signal to prevent excessive high frequencies when the program is played in home.
- (2) The rear component of the Dolby Surround signal is monaural but, to obtain more feeling of presence, the THX reproduces the rear component in simulated stereo by decelerating the rear left and right pitches by 1/100.
- (3) To obtain an equivalent feeling of presence to movie theaters, the THX uses the same quality of speakers for the front and center channels. The rear (surround) speakers are located directly to the left and right of the listeners and their sounds are radiated so that the listener does not sense the source of surround sound.



THX system



KC-X1

CIRCUIT DESCRIPTION

2. Main microprocessor: μ PD78044GF-024 (X14: IC14)

2-1. Function description

(1) Feature

Audio input (9 channels)	CD, PHONO, TUNER, TAPE1, TAPE2, VIDEO1, VIDEO2, VIDEO3, VIDEO4
Video input (4 channels)	VIDEO1 (PLAY/REC), VIDEO2 (PLAY/REC), VIDEO3 (PLAY/REC), VIDEO4 (PLAY)
Surround mode	DOLBY PRO-LOGIC, 3 STEREO, THX CINEMA, DSP LOGIC, MONO
Center mode	NORMAL, WIDEBAND, PHANTOM (PRO-LOGIC, THX) NORMAL, WIDEBAND (3 STEREO)
User memory	Tuner random 40 station preset

(2) Control object

FL display (X14; EDI: FIP30XM1AA)	
LED (X14: D60~63)	
IC LM7001 (X05: IC2) LC75711E (X14: IC15, 16) μ PD6450CX-514 (X14: IC6) μ PD78043GF-020 (X13: IC18)	PLL FL driver (FL: FIP30XM1AA) OSD Control microprocessor

2-2. Destination setting

Setting switch		Destination	Band	Received frequency range	Channel space	Reference frequency
Channel space 50kHz/100kHz (Pin 56)	AM SHORT/ LONG selection 1610kHz/1700kHz (Pin 55)					
High	Low	K1	FM	87.5~108.0 MHz	100 kHz	50 kHz
			AM	530~1610 kHz	10 kHz	10 kHz
High	High	K2	FM	87.5~108.0 MHz	100 kHz	50 kHz
			AM	530~1700 kHz	10 kHz	10 kHz
Low	—	E	FM	87.5~108.0 MHz	50 kHz	50 kHz
			AM	531~1602 kHz	9 kHz	9 kHz

CIRCUIT DESCRIPTION

2-3. Initial setting

(1) Setting method

While pressing the POWER key, plug the power cord to the AC wall outlet.

POWER	OFF
AUDIO selector	TUNER
TAPE 2	OFF
VIDEO selector	VIDEO 1
BAND	FM
Frequency	Lower limit of FM
AUTO/MONO	AUTO
Preset channel display	"--"
Preset channel frequency	Refer to figure 1.
Surround	BYPASS
Front (Left, Right)	0 dB
Center	0 dB
Rear (Left, Right)	0 dB
Sub woofer	0 dB
Center mode	
PRO LOGIC	NORMAL
3-STEREO	NORMAL
THX CINEMA	WIDEBAND
MASTER VOLUME	-45 dB

Destina- tion CH	K1		K2		E	
	BAND	Frequency	BAND	Frequency	BAND	Frequency
1	FM	98.00	FM	98.00	FM	98.00
2	FM	108.00	FM	108.00	FM	108.00
3	AM	630	AM	630	AM	630
4	AM	990	AM	990	AM	990
5	AM	1440	AM	1440	AM	1440
6	AM	1610	AM	1700	AM	1602
7	FM	87.50	FM	87.50	FM	87.50
8	FM	98.50	FM	98.50	FM	98.50
9	AM	530	AM	530	AM	531
10	FM	89.10	FM	89.10	FM	89.10
11~40	FM	87.50	FM	87.50	FM	87.50

Frequency unit FM : MHz
AM : kHz

KC-X1

CIRCUIT DESCRIPTION

2-4. Test mode

(1) Setting method

While pressing the TUNING DOWN key, plug the power cord to the AC wall outlet.

When the test mode is entered, the FL tube display all lights.

(2) Key and functions valid in test mode.

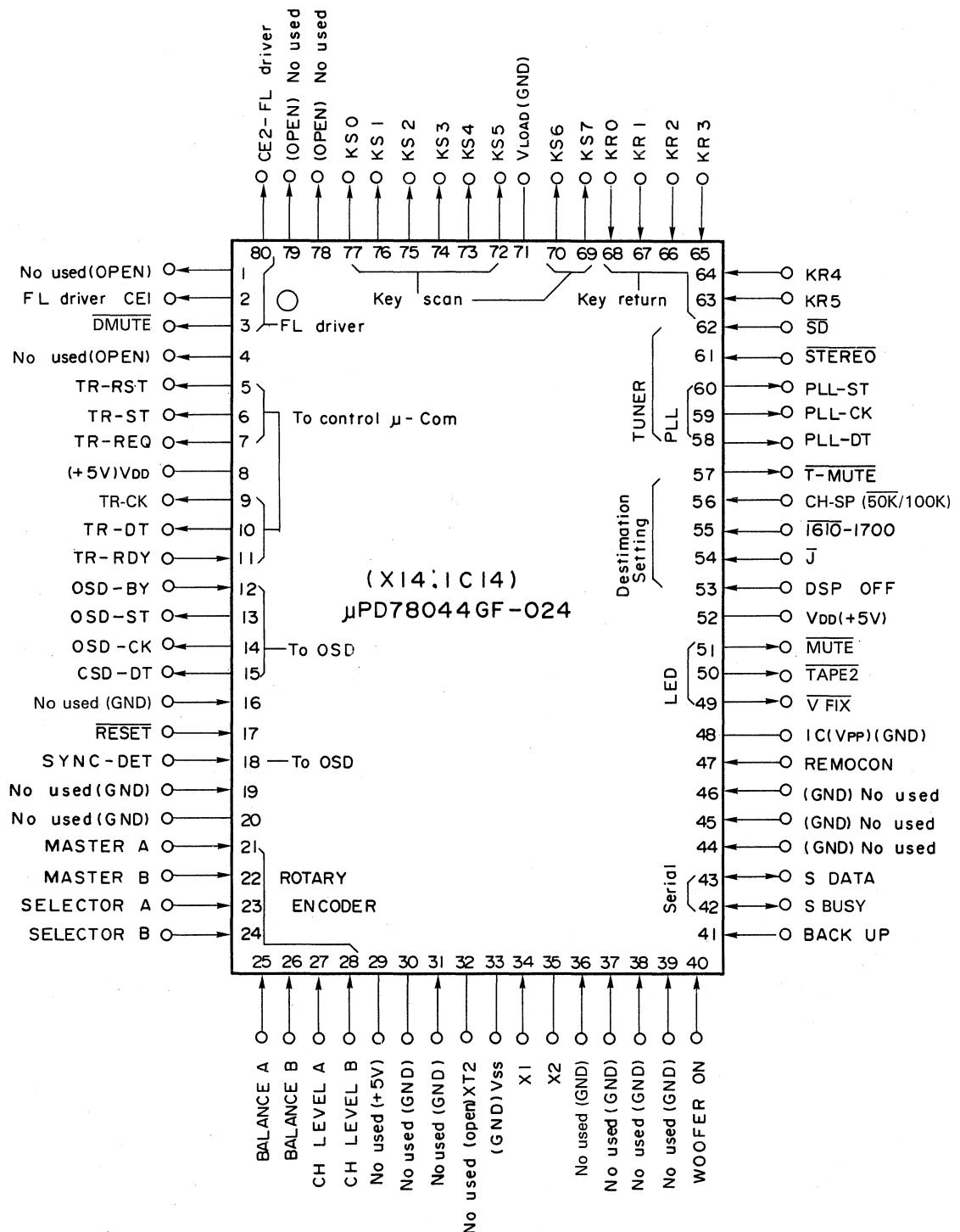
Input key	Function
V. FIX	Each time the key is pressed, the FL test mode alternates. → FLL all lights mode → Grid test mode → Segment test mode
When the following key is pressed, the FL tube display turn off.	
TAPE 2	Each time the key is pressed, the MASTER VOLUME level alternates. → +18 dB → 0 dB → -12 dB → -52 dB → -61 dB
0	Recall preset channel No. 10.
DELAY TIME △▽	The delay time alternates. THX, PROLOGIC : 15 ms ↔ 30 ms DSP LOGIC : 1 ms ↔ 40 ms ↔ 80 ms
PRESENCE LEVEL △▽	The presence level alternates. 0 dB ↔ -10 dB ↔ -20 dB
CHANNEL LEVEL △▽	Each channel level alternates. -12 dB ↔ 0 dB ↔ +12 dB
Other keys	Normal State

(3) Method of cancelling the test mode

While pressing the POEWR key, plug the power cord to the AC wall outlet.

CIRCUIT DESCRIPTION

2-5. Pin connection



KC-X1

CIRCUIT DESCRIPTION

2-6. Pin description

Pin No.	Name	I/O	Description
1	—	O	(OPEN)
2	CE1	O	FL driver output CE1
3	DMUTE	O	DATA MUTE
4	—	O	(OPEN)
5	TR RST	O	Control microprocessor communication RESET
6	TR ST	O	Control microprocessor communication START
7	TR REQ	O	Control microprocessor communication REQ
8	VDD	—	(+5 V)
9	TR CK	O	Control microprocessor communication CLOCK
10	TR DT	O	Control microprocessor communication DATA
11	TR RDY	I	Control microprocessor communication READY
12	OSD BY	I	OSD IC input BUSY
13	OSD ST	O	OSD IC output STROBE
14	OSD CK	O	FL driver IC and OSD IC output CLOCK
15	OSD DT	O	FL driver IC and OSD IC output DATA
16	—	I	(GND)
17	RESET	I	Reset pin
18	SYNC DET	I	OSD video selection input. Internal/External
19	—	I	(GND)
20	—	—	(GND)
21	MASTER A	I	Encoder input MASTER A
22	MASTER B	I	Encoder input MASTER B
23	SELECTOR A	I	Encoder input SELECTOR A
24	SELECTOR B	I	Encoder input SELECTOR B
25	BALANCE A	I	Encoder input BALANCE A
26	BALANCE B	I	Encoder input BALANCE B
27	CH LEVEL A	I	Encoder input CH LEVEL A
28	CH LEVEL B	I	Encoder input CH LEVEL B
29	—	—	A/D analog power supply (+5 V)
30	—	—	A/D constant voltage input (GND)
31	—	I	(GND)
32	—	—	(Open)
33	VSS	—	(GND)
34	X1	I	Oscillator pin
35	X2	—	Oscillator pin
36~39	—	I	(GND)

CIRCUIT DESCRIPTION

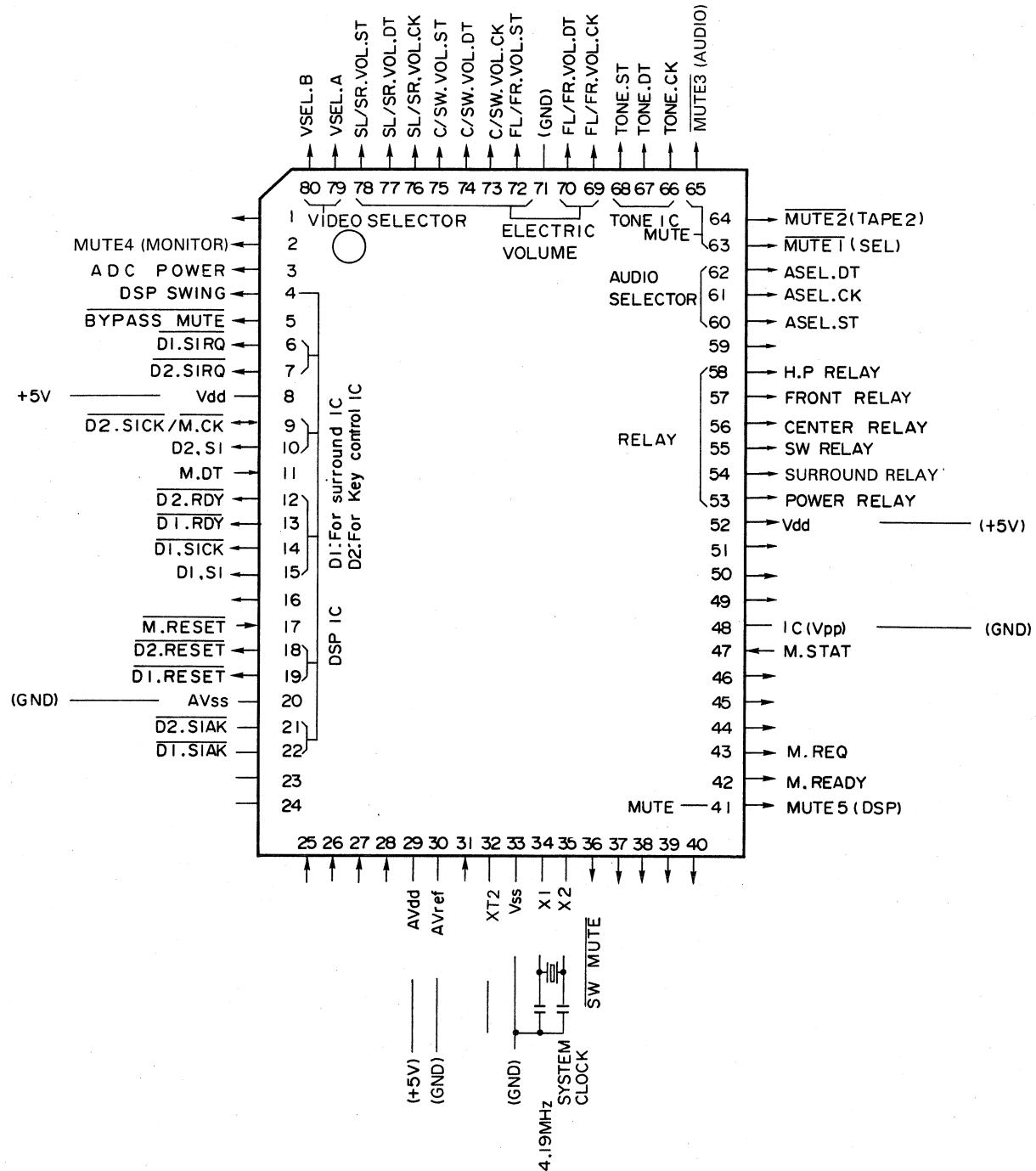
Pin No.	Name	I/O	Description
40	WOOFER ON	I	Sub woofer ON/OFF
41	BACKUP	I	Back up input
42	SBUSY	I/O	Serial BUSY
43	SDATA	I/O	Serial DATA
44~46	—	I	(GND)
47	REMOCON	I	Remote control signal input
48	—	—	(GND)
49	V. FIX	O	V. FIX (LED)
50	TAPE 2	O	TAPE 2 (LED)
51	MUTE	O	MUTE (LED)
52	VDD	—	+5 V
53	DSPOFF	I	DSP ON MODE/DSP OFF MODE
54	J	I	Destination J selection
55	1610/1700	I	AM SHORT/LONG selection
56	CH SP	I	CH. SPACE 50 kHz/100 kHz
57	T MUTE	O	TUNER MUTE
58	PLL DT	O	PLL IC DATA
59	PLL CK	O	PLL IC CLOCK
60	PLL ST	O	PLL IC STROBE
61	STEREO	I	STEREO detection signal input
62	SD	I	SD input
63~68	KR5~0	I	Key return 5~Key return 0
69, 70	KS7, 6	O	Key scan 7, 6
71	VLOAD	—	(GND)
72~77	KS5~0	O	Key scan 5~Key scan 0
78, 79	—	O	(OPEN)
80	CE2	O	FL driver CE2

KC-X1

CIRCUIT DESCRIPTION

3. Control microprocessor: μ PD78043GF-020 (X14: IC18)

3-1. Pin connection



CIRCUIT DESCRIPTION

3-2. Pin description

Pin No.	Name	I/O	Description
1	—	O (I)	No used
2	MUTE 4 (MONITOR)	O	MUTE 4 (Monitor (VIDEO) mute) Low: MUTE OFF, High: MUTE ON
3	ADC POWER	O	Power supply to A/D convertor IC (CS5339-KP) Low: Power OFF, High: Power ON
4	DSP SWING	O	Oscillation to DSP IC (LC83016E) Low: Oscillation, High: No oscillation
5	BYPASS MUTE	O	Surround bypass mute Low: BYPASS, High: SURROUND
6	D1. SIRQ	O	DSP1 (LC83016E) → SIRQ (Request pin)
7	D2. SIRQ	O	DSP2 (LC83016E) → SIRQ (Request pin)
8	Vdd		+ 5 V
9	D2. SICK	I	DSP2 (LC83016E) → SICK (Clock pin)
	M. CK	O	Main μ-com (μPD78044) → Communication clock pin
10	D2. SI	O	DSP2 (LC83016E) → SI (Data pin)
11	M. DT	I	Main μ-com (μPD78044) → Communication data pin
12	D2. RDY	O	DSP2 (LC83016E) → READY (Ready pin)
13	D1. RDY	O	DSP1 (LC83016E) → READY (Ready pin)
14	D1. SICK	O	DSP1 (LC83016E) → SICK (Clock pin)
15	D1. SI	O	DSP1 (LC83016E) → SI (Data pin)
16	—	O (I)	No used
17	M. RESET	I	Main μ-com (μPD78044) → Communication reset pin
18	D2. RESET	O	DSP2 (LC83016E) → RES (Reset pin)
19	D1. RESET	O	DSP1 (LC83016E) → RES (Reset pin)
20	AVss		GND
21	D2. SIAK	I	DSP2 (LC83016E) → SIAK (Acknoledge pin)
22	D1. SIAK	I	DSP1 (LC83016E) → SIAK (Acknoledge pin)
23~28	—	I	No used
29	AVdd		+ 5 V
30	AVref		GND
31	—	I	No used
32	XT2		No used
33	Vss		GND
34	X1	I	Oscillator 4.19 MHz
35	X2		Oscillator 4.19 MHz
36~40	—	O	No used
41	MUTE 5 (DSP)	O	MUTE 5 (DSP mute) Low: MUTE OFF, High: MUTE ON
42	M. READY	O	Main μ-com (μPD78044) → Communication READY pin
43	M. REQ	I	Main μ-com (μPD78044) → Communication REQUEST pin
44~46	—	O (I)	No used
47	M. START	I	Main μ-com (μPD78044) → Communication START pin

KC-X1

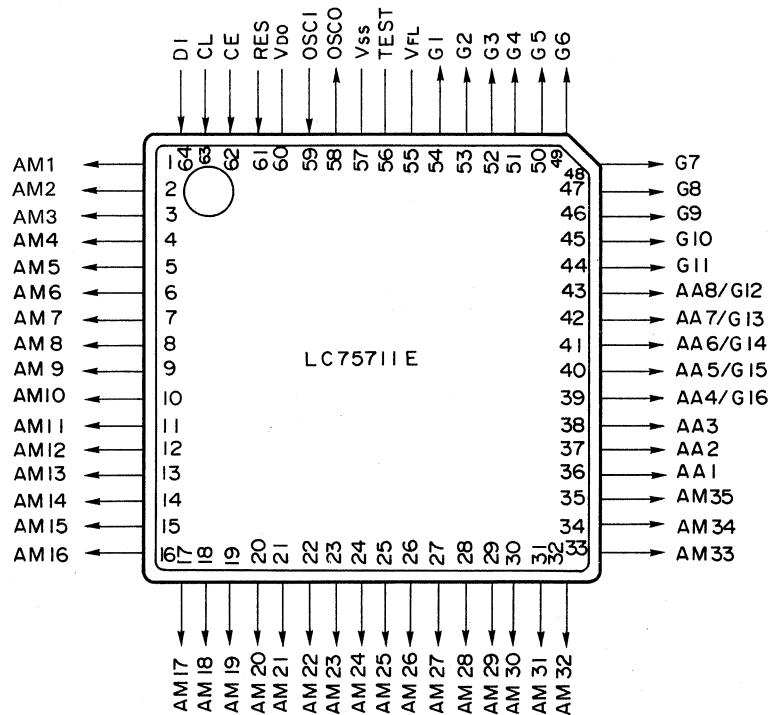
CIRCUIT DESCRIPTION

Pin No.	Name	I/O	Description
48	IC (Vpp)		GND
49 ~ 51	—	O (I)	No used
52	Vdd		+ 5 V
53	POWER RELAY	O	Power relay
54	SURROUND RELAY	O	Surround (Rear L/R ch) speaker relay
55	SW RELAY	O	Sub woofer speaker relay
56	CENTER RELAY	O	Center speaker relay
57	FRONT RELAY	O	Front (L/R ch) speaker relay
58	H.P. RELAY	O	Headphone relay
59	—	O (I)	No used
60	ASEL. ST	O	Audio selector IC (NJU7311L/TC9163N/TC9164N) → ST (Strobe pin)
61	ASEL. CK	O	Audio selector IC (NJU7311L/TC9163N/TC9164N) → CK (Clock pin)
62	ASEL. DT	O	Audio selector IC (NJU7311L/TC9163N/TC9164N) → DATA (Data pin)
63	MUTE 1 (SELECTOR)	O	MUTE 1 (Selector selection mute) Low: MUTE ON, High: MUTE OFF
64	MUTE 2 (TAPE 2)	O	MUTE 2 (TAPE 2 selection mute) Low: MUTE ON, High: MUTE OFF
65	MUTE 3 (AUDIO)	O	MUTE 3 (Output mute) Low: MUTE ON, High, MUTE OFF
66	TONE. CK	O	Electric tone IC (TC9184P) → CK (Clock pin)
67	TONE. DT	O	Electric tone IC (TC9184P) → DATA (Data pin)
68	TONE. ST	O	Electric tone IC (TC9184P) → STB (Strobe pin)
69	FL/FR VOL. CK	O	FL/FR ch Electric volume IC (TC9213P) → CK (Clock pin)
70	FL/FR VOL. DT	O	FL/FR ch Electric volume IC (TC9213P) → DATA (Data pin)
71	Vload		GND
72	FL/FR VOL. ST	O	FL/FR ch Electric volume IC (TC9213P) → STB (Strobe pin)
73	C/SW VOL. CK	O	CENTER/SUBWOOFER ch Electric volume IC (TC9213P) → CK
74	C/SW VOL. DT	O	CENTER/SUBWOOFER ch Electric volume IC (TC9213P) → DATA
75	C/SW VOL. ST	O	CENTER/SUBWOOFER ch Electric volume IC (TC9213P) → STB
76	SL/SR VOL. CK	O	LS/RS ch Electric volume IC (TC9213P) → CK (Clock pin)
77	SL/SR VOL. DT	O	LS/RS ch Electric volume IC (TC9213P) → DATA (Data pin)
78	SL/SR VOL. ST	O	LS/RS ch Electric volume IC (TC9213P) → STB (Strobe pin)
79	VSEL. A	O	Video selector IC (MC74HC4052N/MC74HC4053N) → A
80	VSEL. B	O	Video selector IC (MC74HC4052N/MC74HC4053N) → B

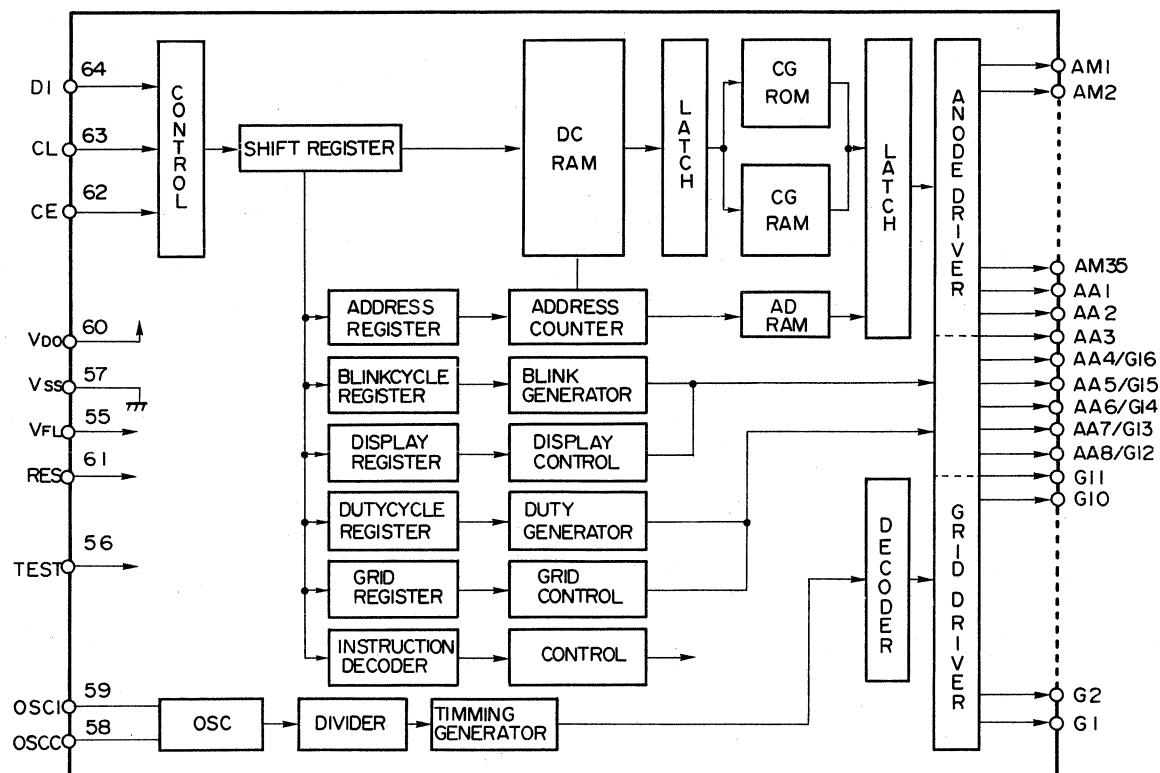
CIRCUIT DESCRIPTION

4. Display control driver: LC75711E (X14: IC15, 16)

4-1. Pin connection

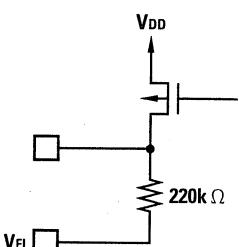
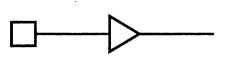
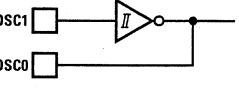
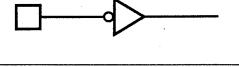


4-2. Block diagram

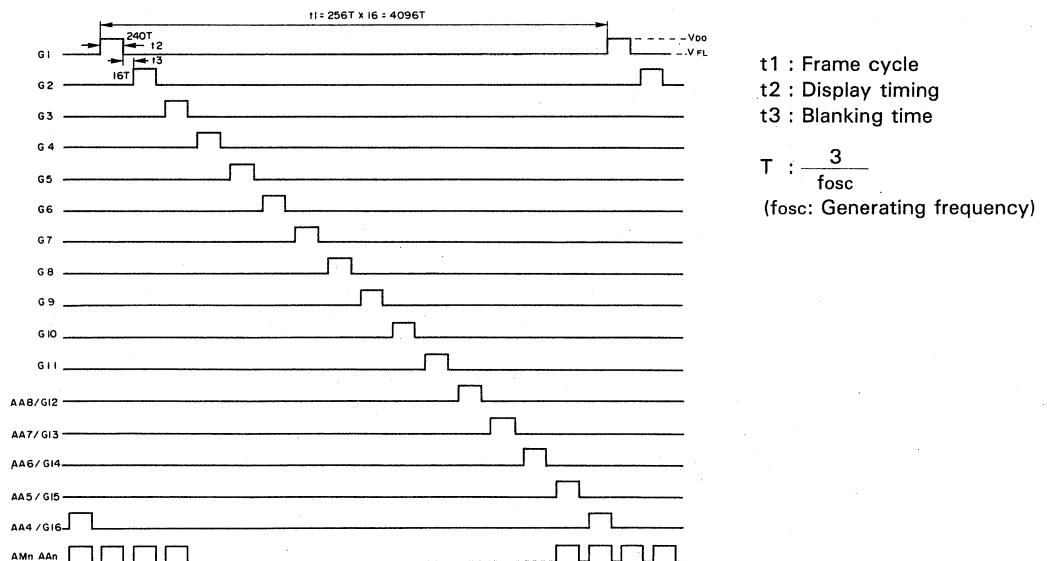


CIRCUIT DESCRIPTION

4-3. Pin function

Pin No.	Pin name	Circuit design	Function
1 ~ 35 36 ~ 38	AM1 ~ AM35 AA1 ~ AA3		Anode output terminals With built-in pull-down resistors.
39 ~ 43	AA4/G16 AA5/G15 AA6/G14 AA7/G13 AA8/G12		Anode/grid output terminals These terminals become the grid output terminals when the number of display columns selected with the "display column specification" instruction is between 12 and 16 columns. With built-in pull-down resistors.
44 ~ 54	G1 ~ G11		Grid output terminals With built-in pull-down resistors.
55	VFL		Driver circuitry power terminal
56	TEST		LSI test terminal Always connect to Vss for use.
57	Vss		Logic circuitry power terminal, GND
58, 59	OSC1 OSCO		External C and R connection terminals for oscillator
60	VDD		Logic circuitry power terminal, +5 V typ
61	RES		System reset input terminal
62 ~ 64	DI CL CE		Serial data transfer terminals DI : Transfer data CL: Sync clock CE: Chip enable

4-4. Grid timing chart



CIRCUIT DESCRIPTION

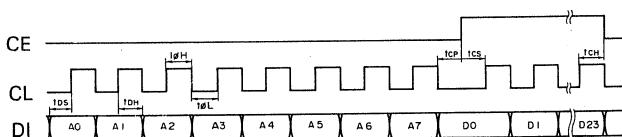
4-5. Data input ADDRESS

- The serial control data consists of 8 address bits and 24 bits of instruction code. The address code is used as the chip select data when the device is connected to the common bus line, and the code configuration is as shown below.

Address							
A0	A1	A2	A3	A4	A5	A6	A7
1	1	1	0	0	1	1	0

Note) Instruction "CGRAM data write" requires 56 bits.

- DI, CL and CE timing



The data is input internally at the positive-going edge of CL, and latched at the negative-going edge of CE. When an instruction is sent from the microprocessor, the period after having sent an instruction until the start of the next instruction shall be longer than the instruction execution time.

KC-X1

CIRCUIT DESCRIPTION

5. Control of selector IC and speaker relay

5-1. Audio selector

Selector IC name	(X08: IC35) NJU7311L								(X13: IC2) TC9164N①	
Pin No.	2	3	5	6	8	9	11		10	11
Selector pin name	27	26	24	23	20	21	18		19	18
Surround mode	T H X O OFF	T H X O ON	T H X O FF	T H X O N	T H X O FF	S U R O UND	T O N O FF	T O N O ON		
BYPASS	O		O		O		O		▲	△
PROLOGIC	O		O		O		O		O	O
3 STEREO	O		O		O		O		O	O
THX CINEMA	O		O		O		O		O	O
DSP LOGIC	O		O		O		O		O	O
MONO	O		O		O		O		O	O

Selector IC name	(X13: IC1) TC9163N								
Pin No.	Lch	27	26	25	23	22	21	19	18
	Rch	2	3	4	6	7	8	10	11
Selector pin name	T U N E R	P H O N O	C D P E 1	T A D E 1	V I D E 1	V I D E 2	V I D E 3	V I D E 4	V I D E 5
Selector position	TUNER	O			O				
TAPE 1					O				
VIDEO 1						O			
VIDEO 2							O		
VIDEO 3								O	
VIDEO 4									O
CD		O		O					
PHONO			O						

Selector IC name	(X13: IC2) TC9164N ②						
Pin No.	Lch	2	3	4	5	7	8
	Rch	27	26	25	24	22	21
Selector pin name	V I D E 3	V I D E 2	V I D E 1	T A E 1	S O R C	T A E 2	
Selector position	O 3	O 2	O 1	O	E		
TUNER	O	O	O	O	◆	◆	◊
TAPE 1	O	O	O	O	◆	◆	◊
VIDEO 1	O	O	O	O	◆	◆	◊
VIDEO 2	O	O	O	O	◆	◆	◊
VIDEO 3	O	O	O	O	◆	◆	◊
VIDEO 4	O	O	O	O	◆	◆	◊
CD	O	O	O	O	◆	◆	◊
PHONO	O	O	O	O	◆	◆	◊

O; ON ◊; With TAPE 2 ON △; With TONE CONTROL ON
 Blank; OFF ♦; With TAPE 2 OFF ▲; With TONE CONTROL OFF

5-2. Video selector

Selector IC name	(X14: IC1, IC2) MC74HC4052N			(X14: IC8, IC9) MC74HC4053N			
Control pin Selector	INHIBIT (6pin)	B (9pin)	A (10pin)	INHIBIT (6pin)	C (9pin)	B (10pin)	A (11pin)
VIDEO 1	L	L	L	L	L	L	L
VIDEO 2	L	L	H	L	H	H	H
VIDEO 3	L	H	L				
VIDEO 4	L	H	H				

H: High L: Low

5-3. Line out relay

Line out relay	Surround mode	THX	PROLOGIC	3 STEREO	DSPLOGIC	MONO	Nor-mally	PP
		N	W	P	N	W		
Front (L/Rch)	relay (X13: K1)	O	O	O	O	O	O	x O
Center (Cch)	relay (X13: K2)	O	O	x	O	O	O	O x
Rear (LS/RSch)	relay (X13: K4)	O	O	O	O	O	x	x x
Headphone	relay (X13: K5)	O	O	O	O	O	O	O O O

O: ON x: OFF

N ; "NORMAL" mode

W ; "WIDEBAND" mode

P ; "PHANTOM" mode

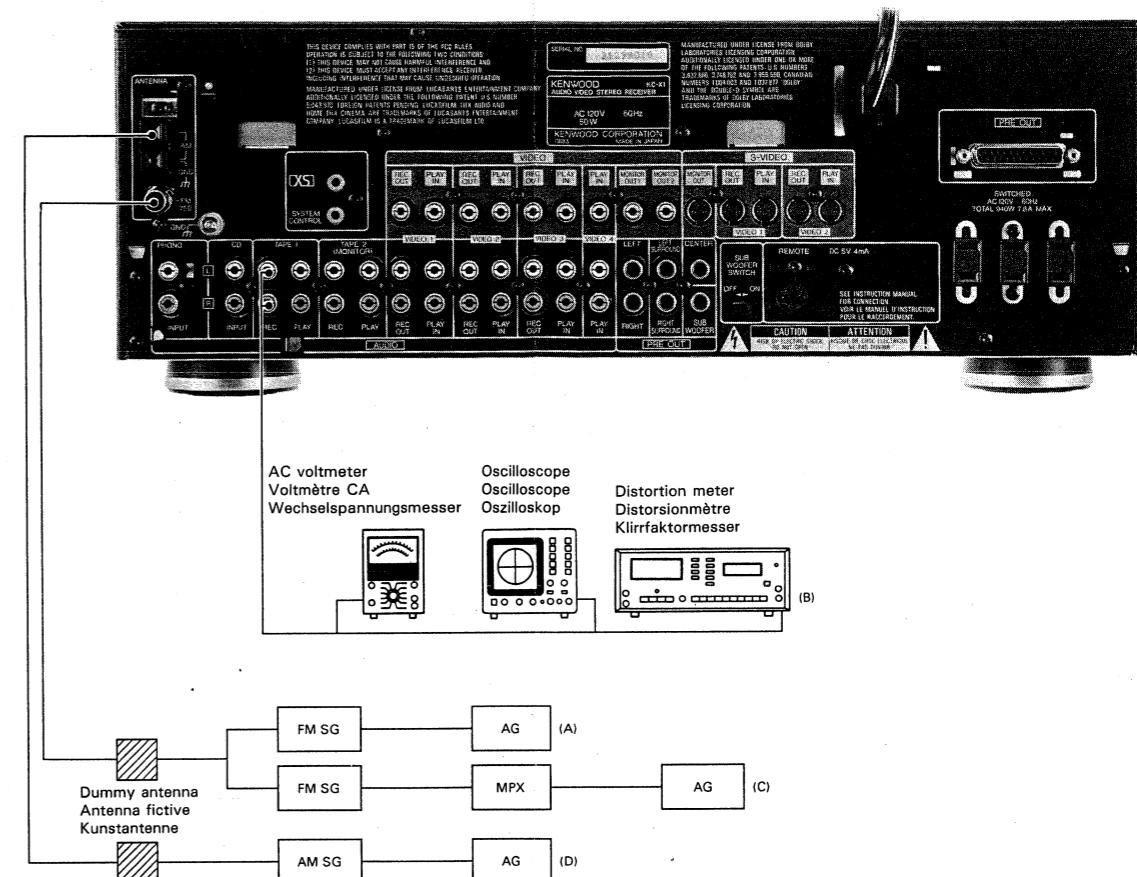
PP ; "PHANTOM" mode (THX and PROLOGIC mode ON).

ADJUSTMENT

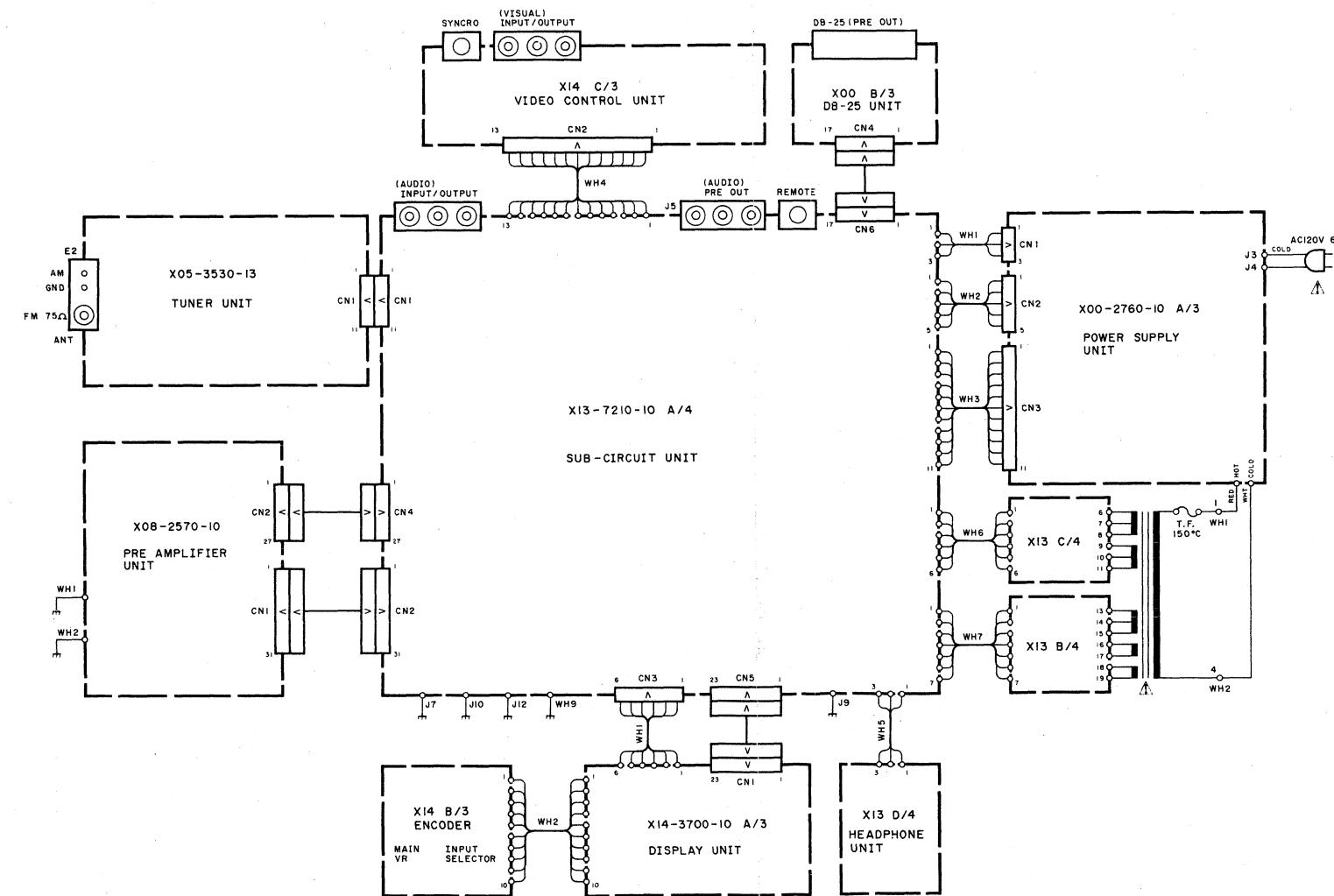
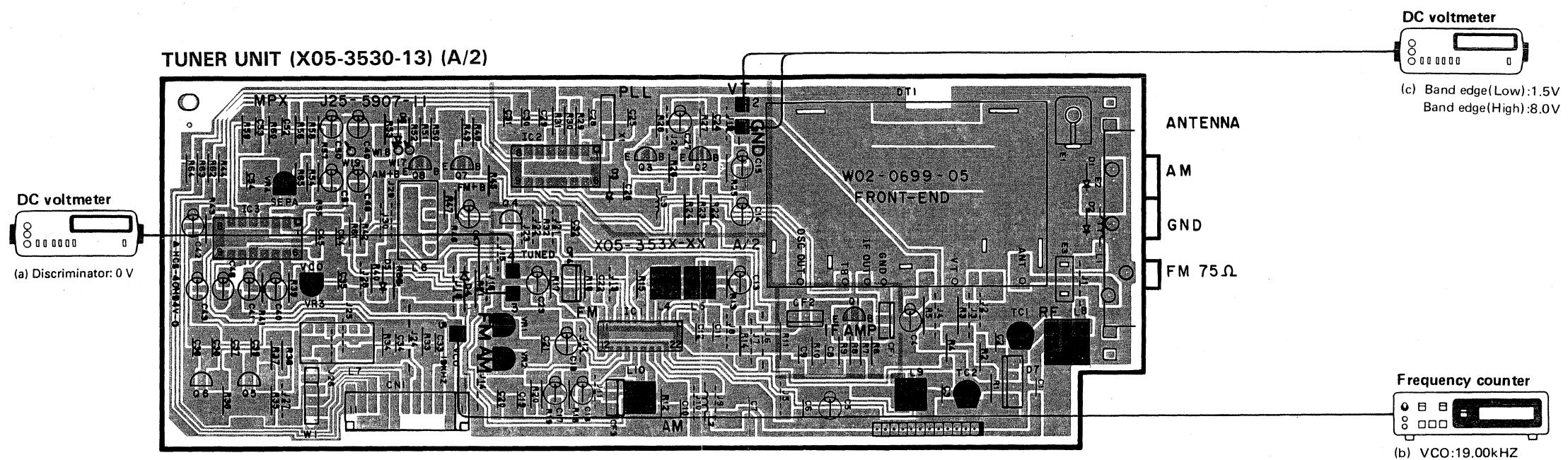
KC-X1 KC-X1

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
F M SECTION (X05-) SELECTOR: FM							
1	DISCRIMINATOR	(A) 98.0MHz 1kHz, ±75kHz dev 60dB μ (ANT input)	Connect a DC voltmeter between TP3 and TP4. (X05-)	AUTO or MONO 98.0MHz	L4 (X05-)	0V	(a)
2	DISTORTION (MONO)	(C) 98.0MHz 1kHz, ±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 60dB μ (ANT input)	(B)	98.0MHz	L5 (X05-)	Minimum distortion	
3	VCO	(A) 98.0MHz 0 dev 100dB μ (ANT input)	Connect a frequency counter between TP5 and GND. (X05-)	AUTO 98.0MHz	VR3 (X05-)	19.00kHz	(b)
4	DISTORTION (STEREO)	(C) 98.0MHz 1kHz, ±68.25kHz dev Selector:L or R Pilot:±6.75kHz dev 60dB μ (ANT input)	(B)	98.0MHz	T1 (W02-)	Minimum distortion.(L or R)	
5	SEPARATION	(C) 98.0MHz Stereo signal 60dB μ (ANT input)	(B)	AUTO 98.0MHz	VR4 (X05-)	Minimum crosstalk	
6	TUNING LEVEL	(A) 98.0MHz 0dev 14dB μ (ANT input) 750	(B)	AUTO or MONO 98.0MHz	VR1 (X05-)	Adjust VR1 and stop at the point where ED1(TUNED) goes on.	
AM SECTION (X05-) SELECTOR: AM							
(1)	BAND EDGE (Low)	—	Connect a DC voltmeter between TP1(GND) and TP2. (X05-)	—	L9 (X05-)	1.5V	(c)
(2)	BAND EDGE (High)	—	Connect a DC voltmeter between TP1(GND) and TP2. (X05-)	—	TC2 (X05-)	8.0V	(c)
Repeat alignments (1) and (2) several times.							
(3)	RF ALIGNMENT (1)	(D) 600kHz 20dB μ (ANT input)	(B)	—	L8 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
(4)	RF ALIGNMENT (2)	(D) 1400kHz 20dB μ (ANT input)	(B)	—	TC1 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments (3) and (4) several times.							
(5)	IF TRANSFORMER	(D) 1000kHz 20dB μ (ANT input)	(B)	—	L10 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
(6)	TUNING LEVEL	(D) 1000kHz 36dB μ (ANT input)	(B)	—	VR2 (X05-)	Adjust VR2 and stop at the point where ED1(TUNED) goes on.	

System connections



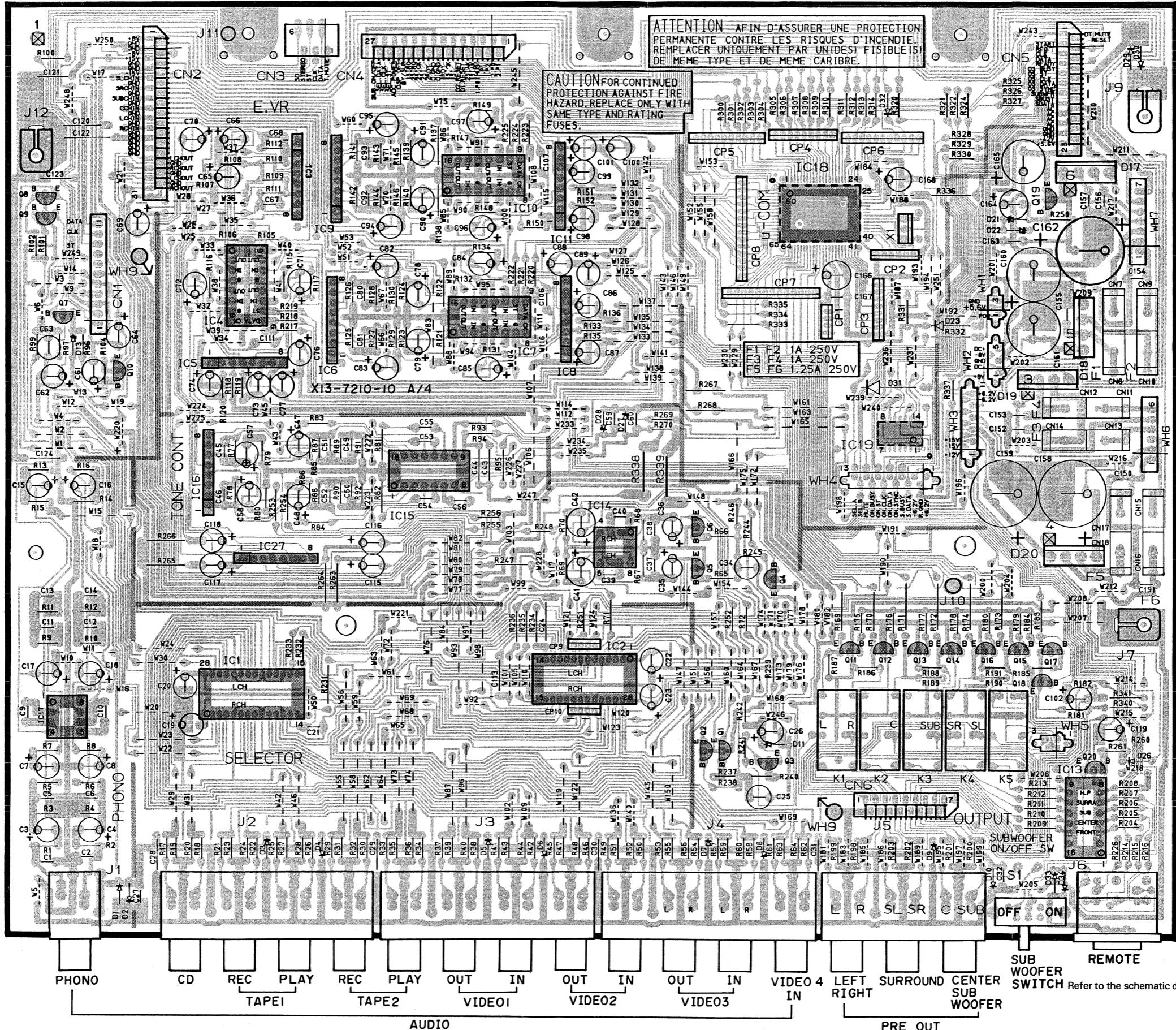
P.C. BOARD (Component side view)



Refer to the schematic diagram for the values of resistors and capacitors.

P.C. BOARD (Component side view)

SUB-CIRCUIT UNIT (X13-7210-10) (A/4)

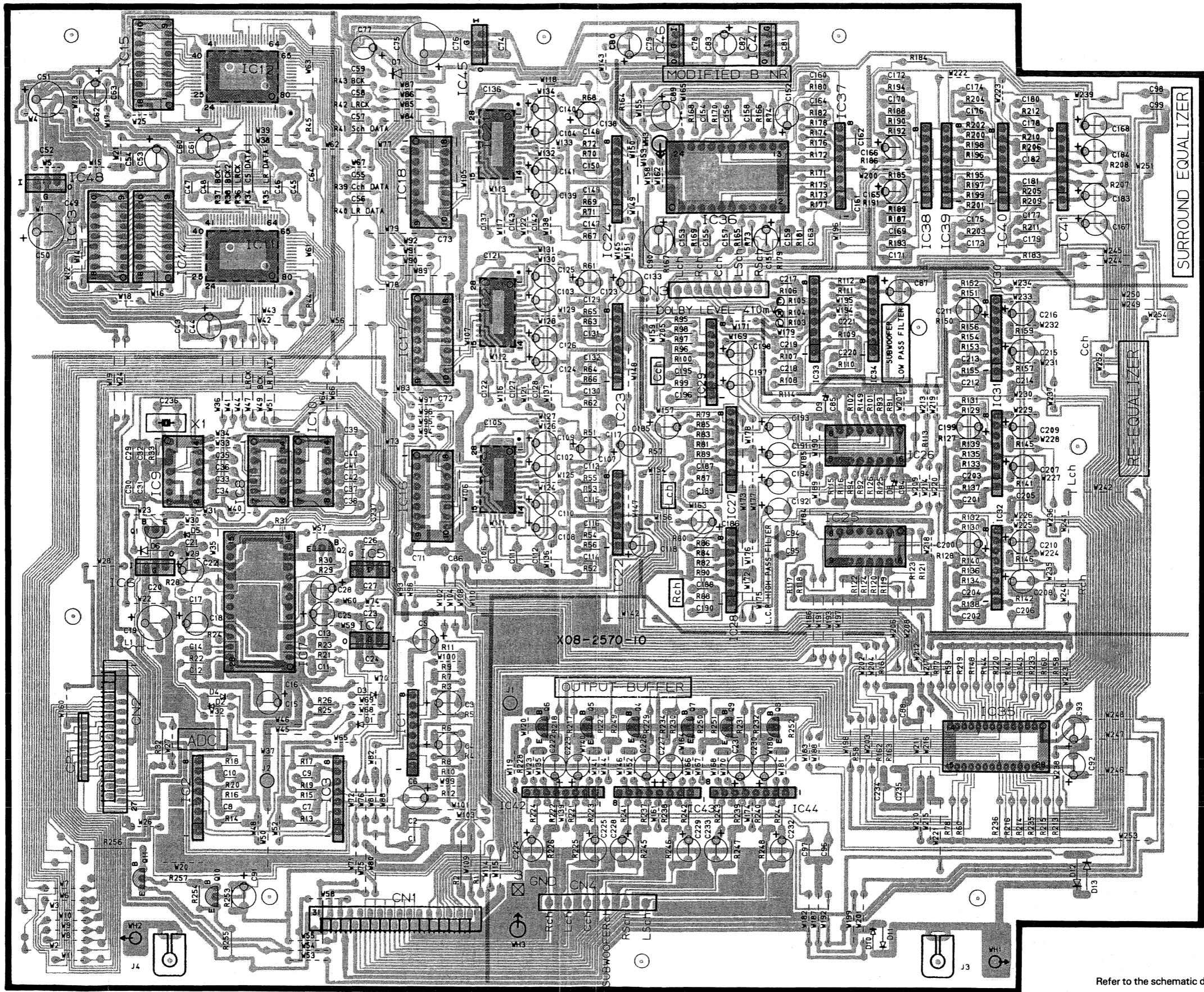


**SUB-CIRCUIT UNIT
(X13-7210-10) (D/4)**

R SWITCH Refer to the schematic diagram for the values of resistors and capacitors.

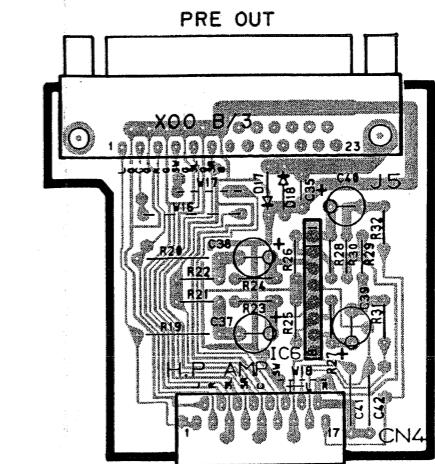
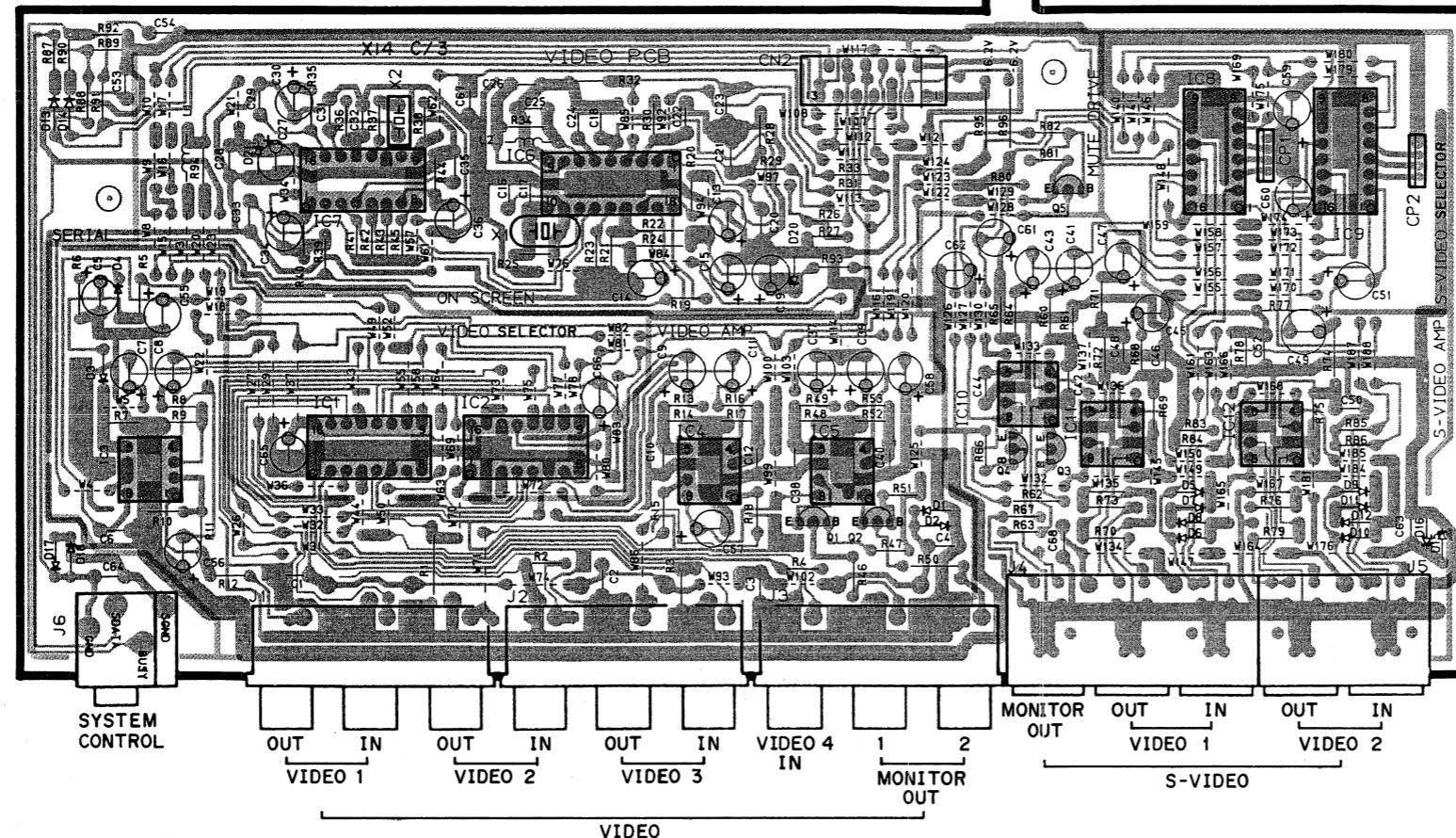
P.C. BOARD (Component side view)

PREAMPLIFIER UNIT (X08-2570-10)



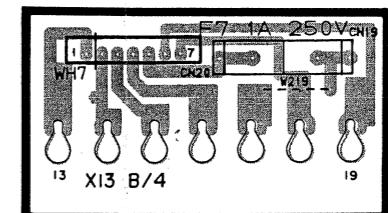
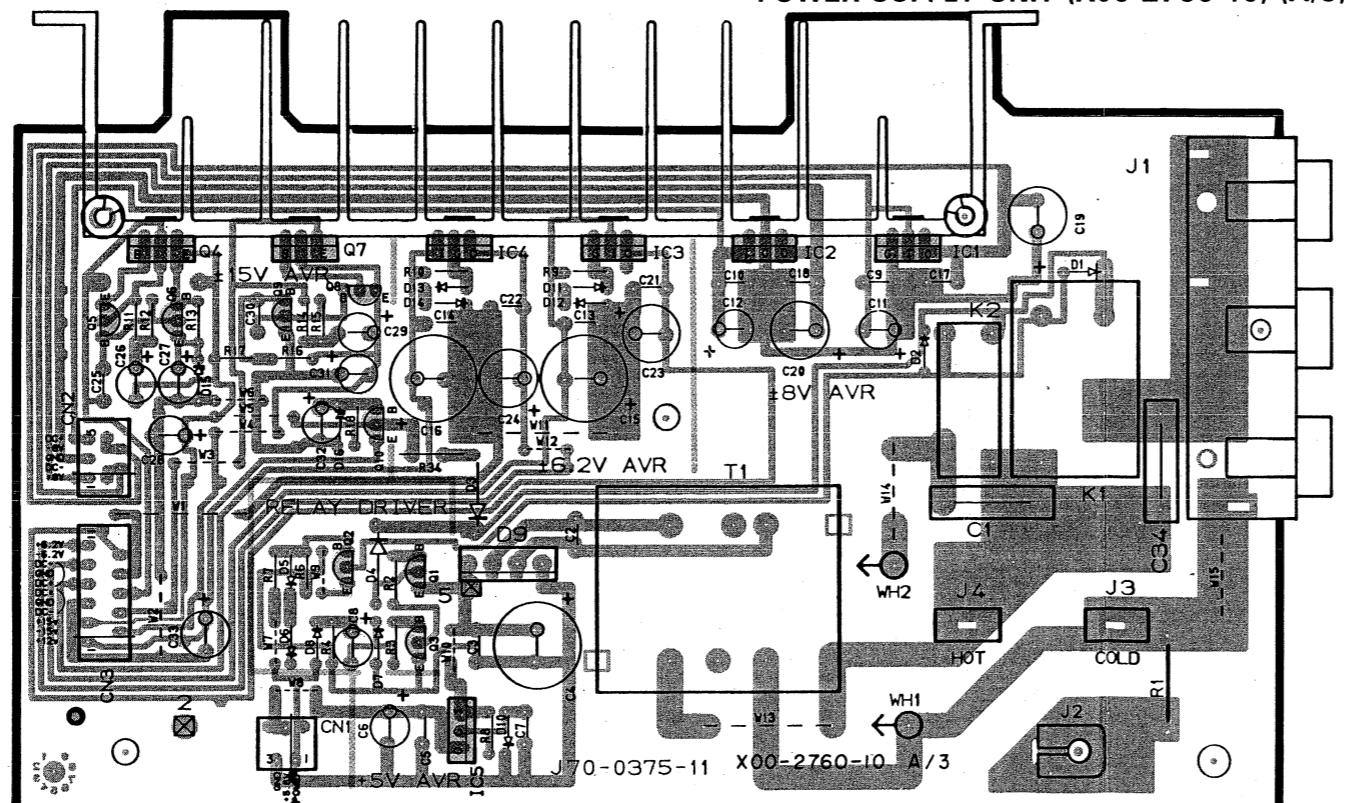
P.C. BOARD (Component side view)

DISPLAY UNIT (X14-3700-10) (C/3)

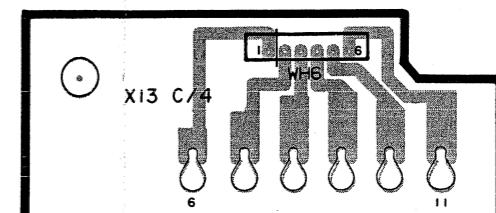


POWER SUPPLY UNIT (X00-2760-10) (B/3)

POWER SUPPLY UNIT (X00-2760-10) (A/3)



SUB-CIRCUIT UNIT (X13-7210-10) (B/4)

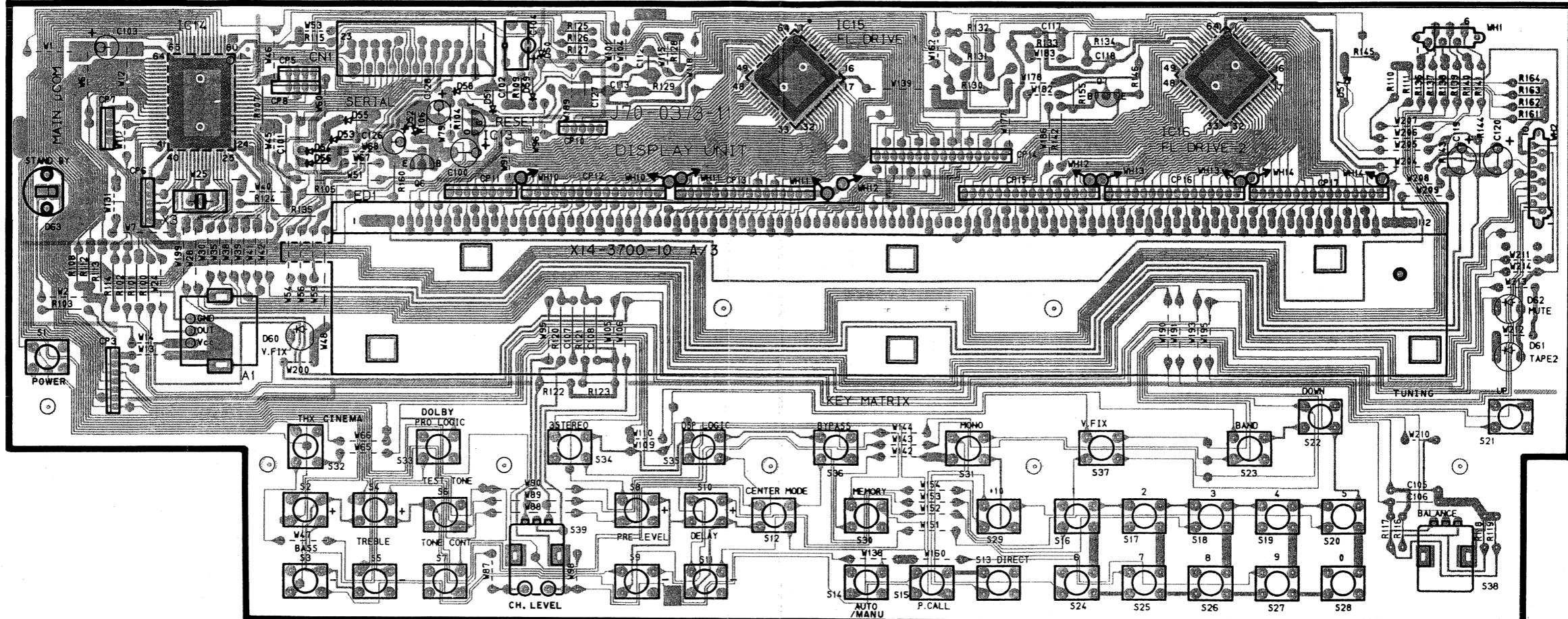


SUB-CIRCUIT UNIT (X13-7210-10) (C/4)

Refer to the schematic diagram for the values of resistors and capacitors.

P.C. BOARD (Component side view)

DISPLAY UNIT (X14-3700-10) (A/3)



X14 B/3
MASTER VR PCB

SELECTOR

S40 TAPE2

R149 R150 R147 R148 C122 C21

W198

R154 R153 C124 C123 V203 V202 V201

R151 R152

VOLUME CONTROL

S43 MASTER VR

S40 TAPE2

R149 R150 R147 R148 C122 C21

W198

R154 R153 C124 C123 V203 V202 V201

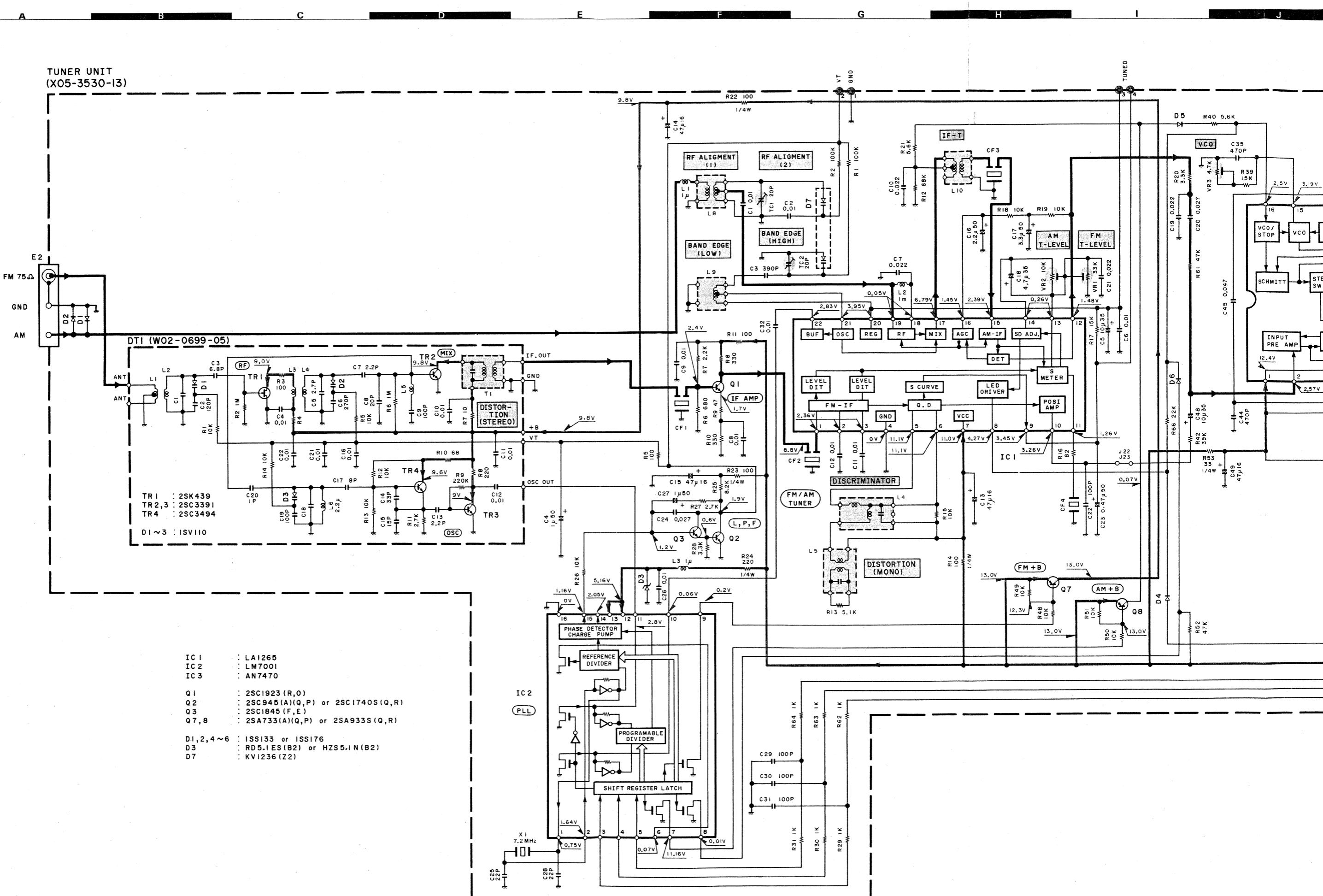
R151 R152

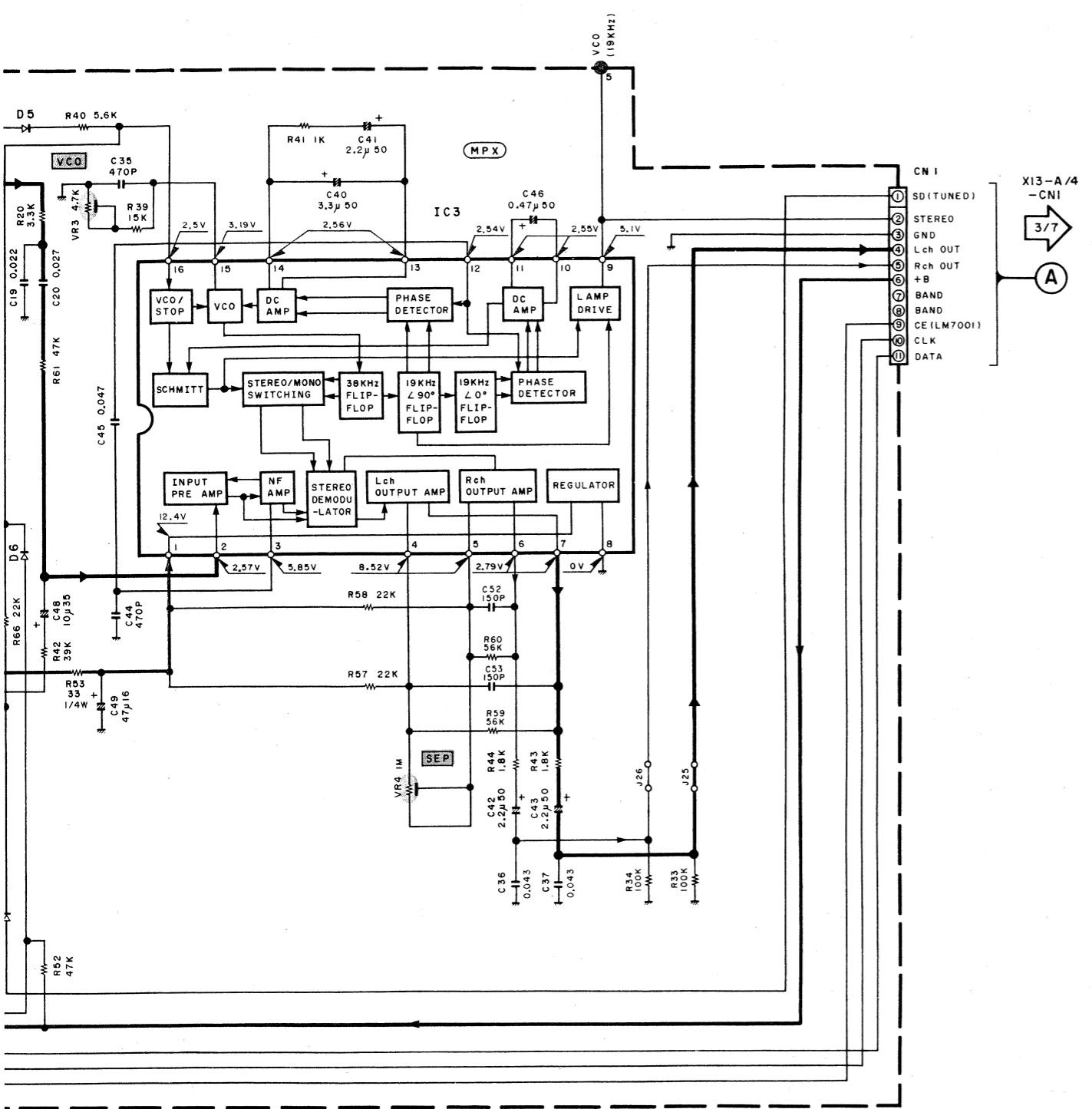
S43 MASTER VR

VOLUME CONTROL

DISPLAY UNIT (X14-3700-10) (B/3)

Refer to the schematic diagram for the values of resistors and capacitors.





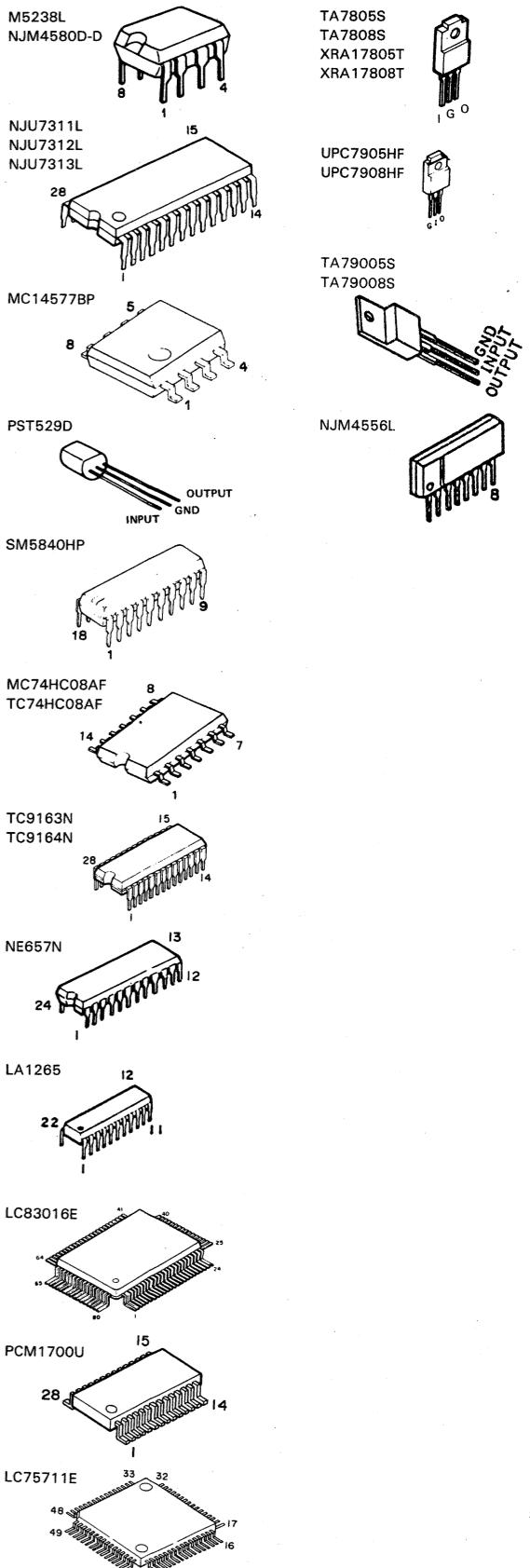
KC-XI (K) (1/7)

SIGNAL LINE
GND LINE
+B LINE
-B LINE

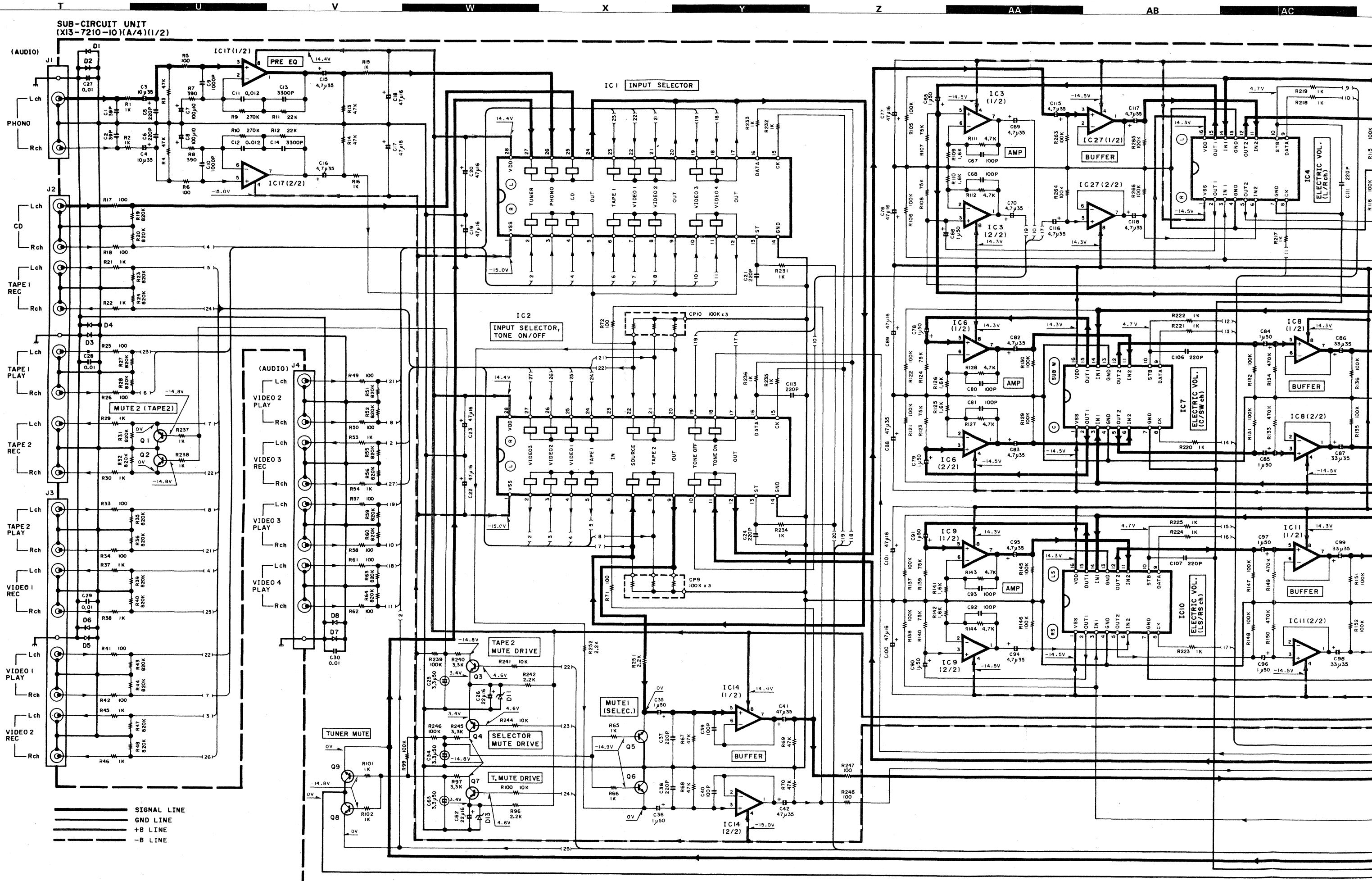
OC voltages are as measured with a high-impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units. Values in parentheses are as measured during reception of the AM broadcast signal (with a signal strength of 60 dB at the ANT terminal).

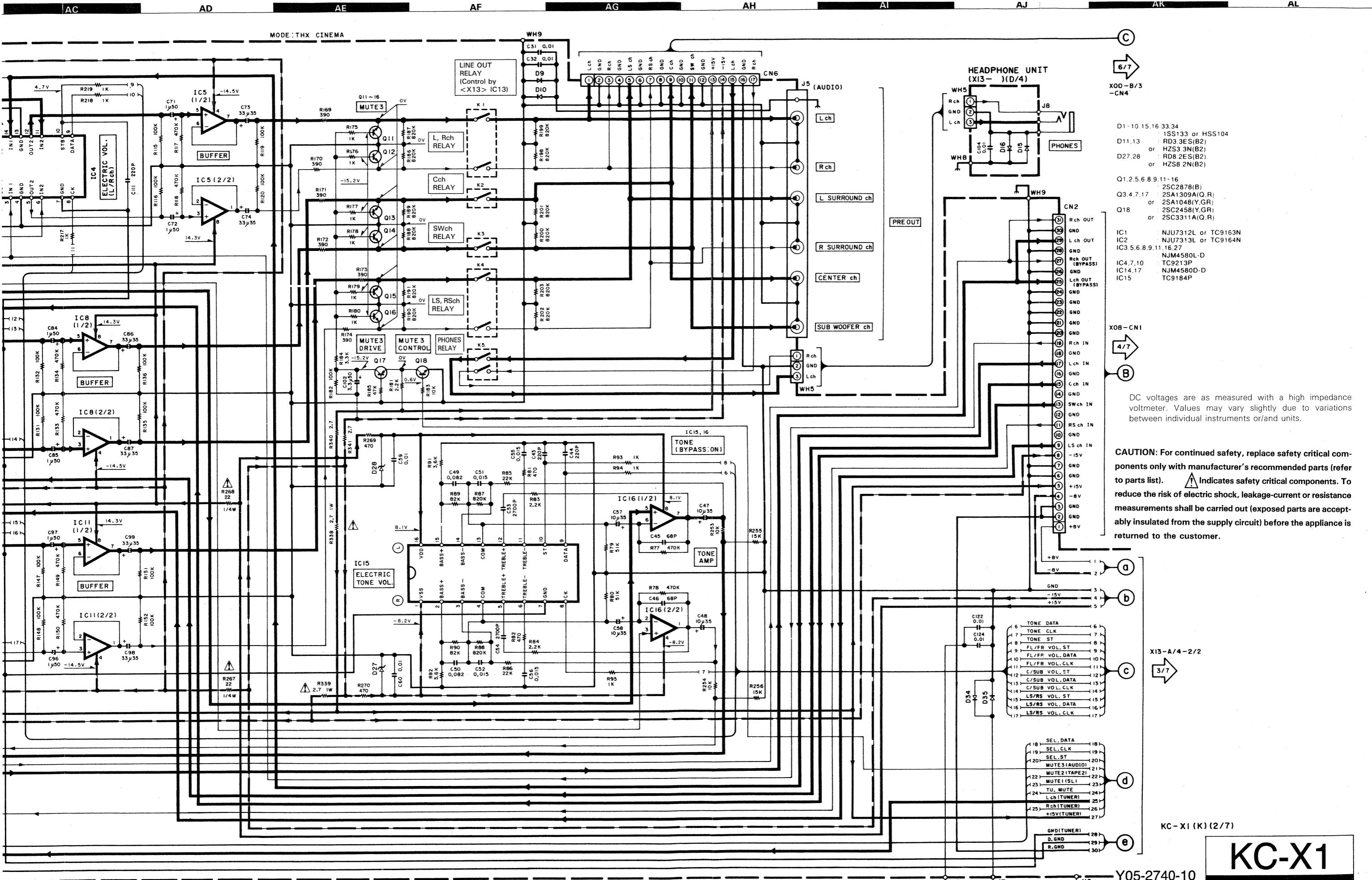
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer. Y05-2740-10

05-2740-10



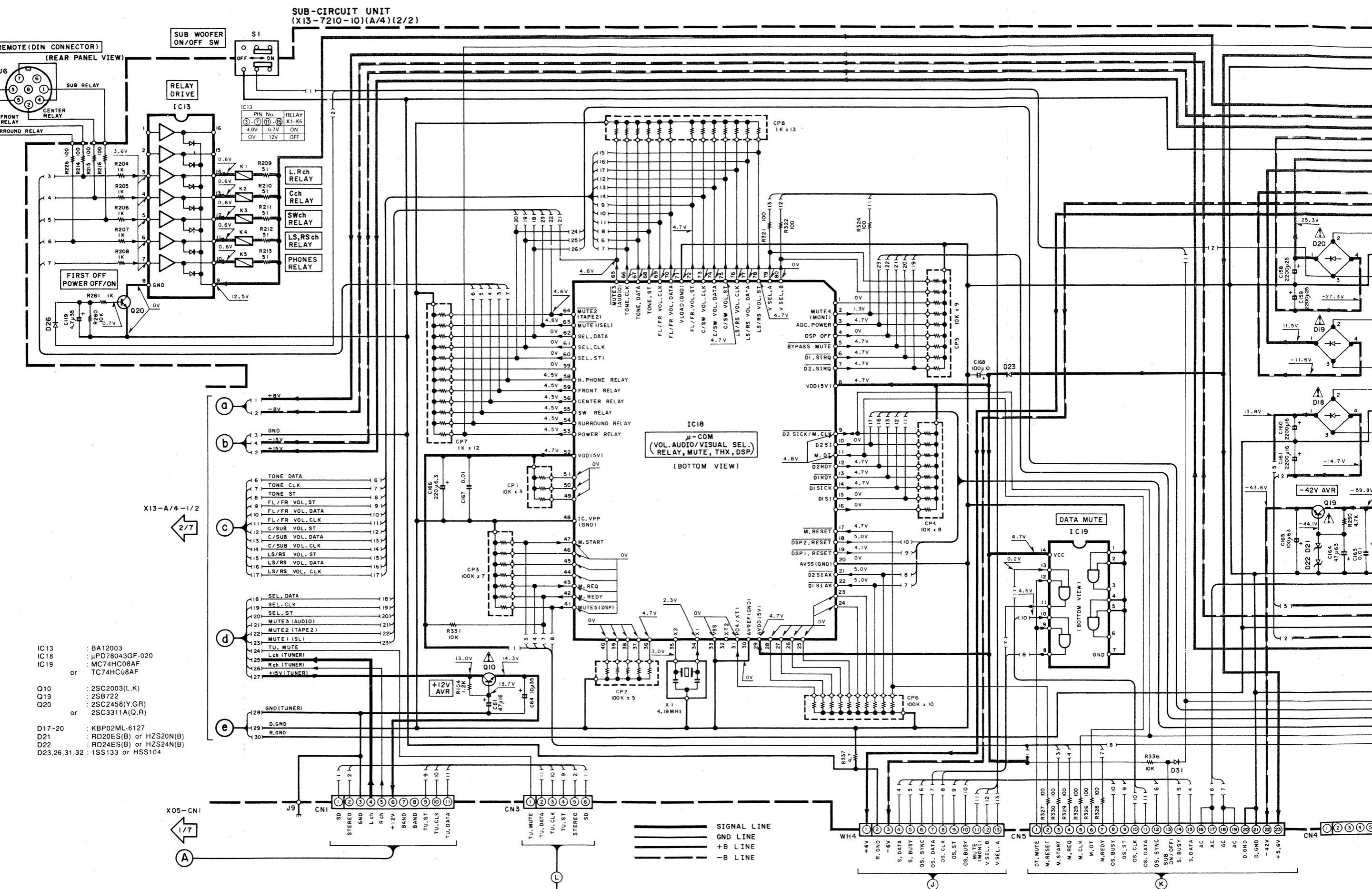
KC-X1

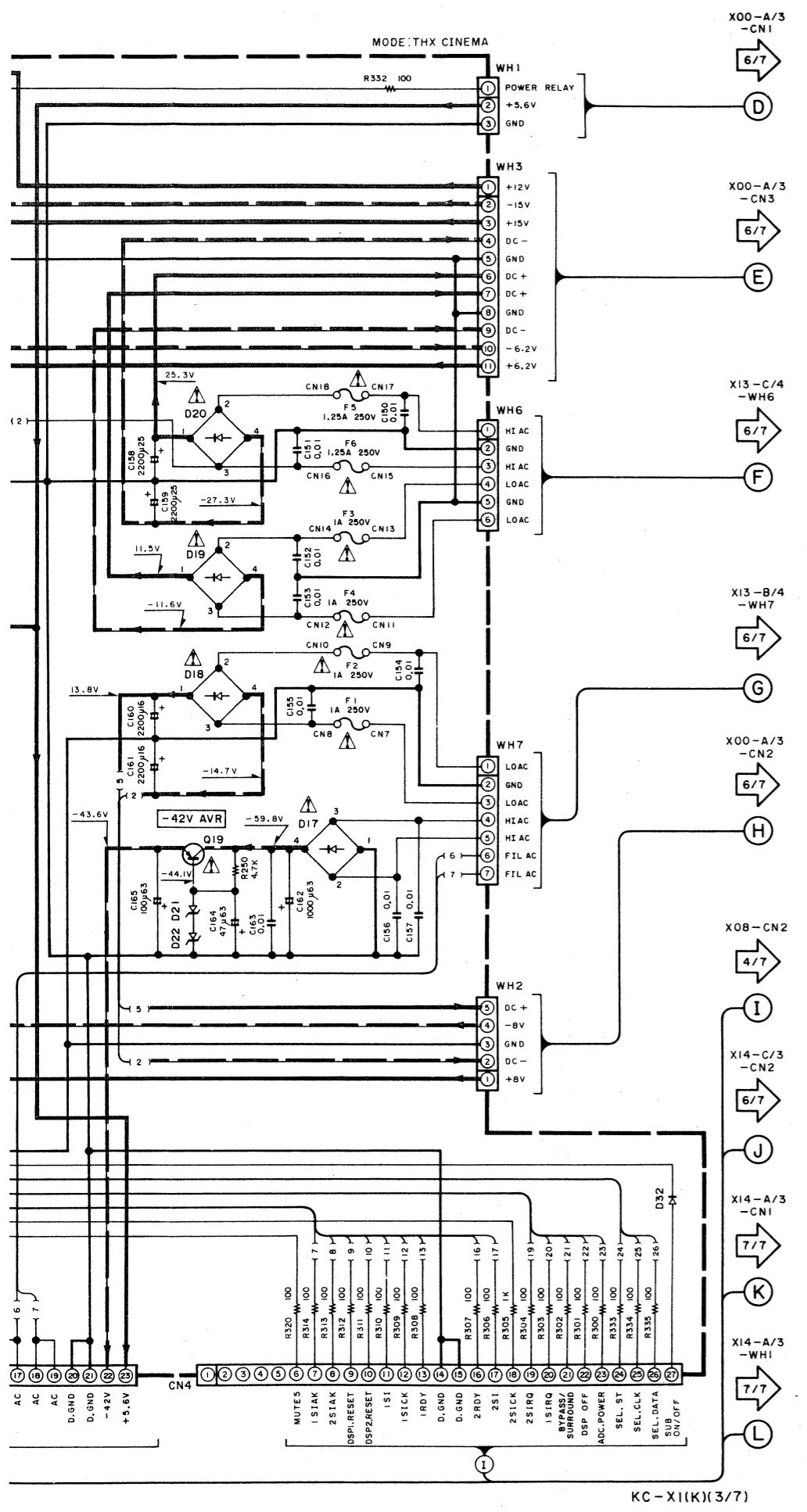




KC-X1

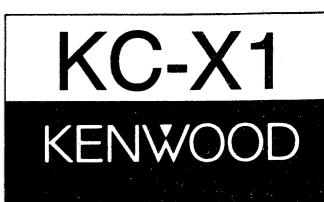
KENWOOD

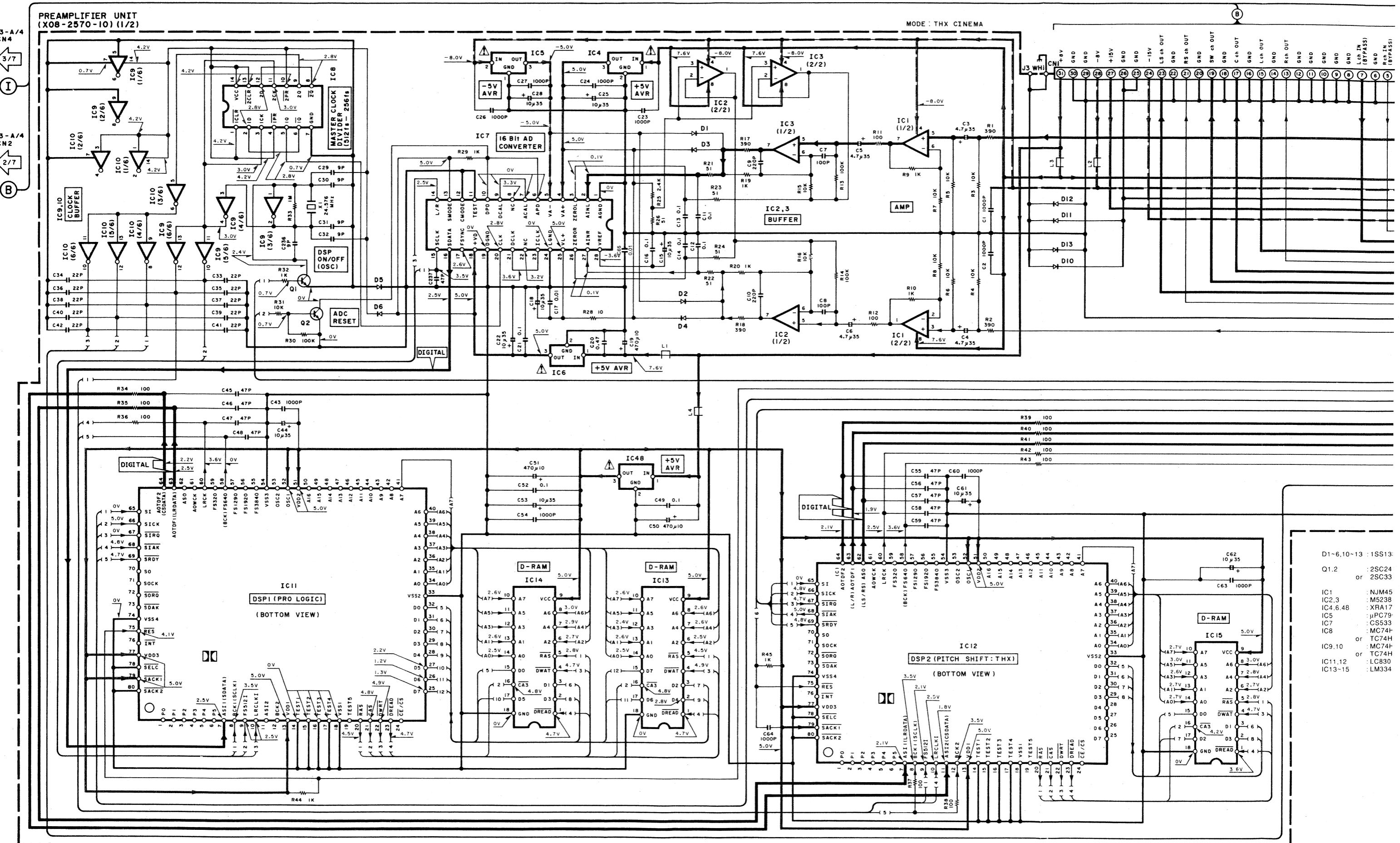


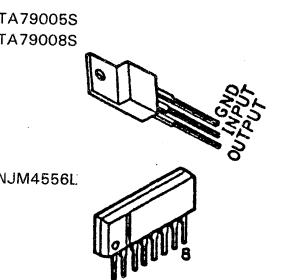
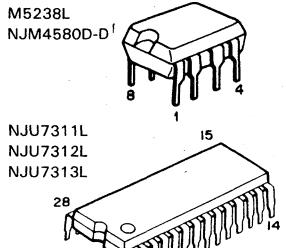
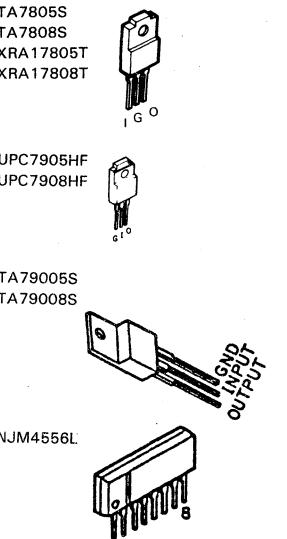
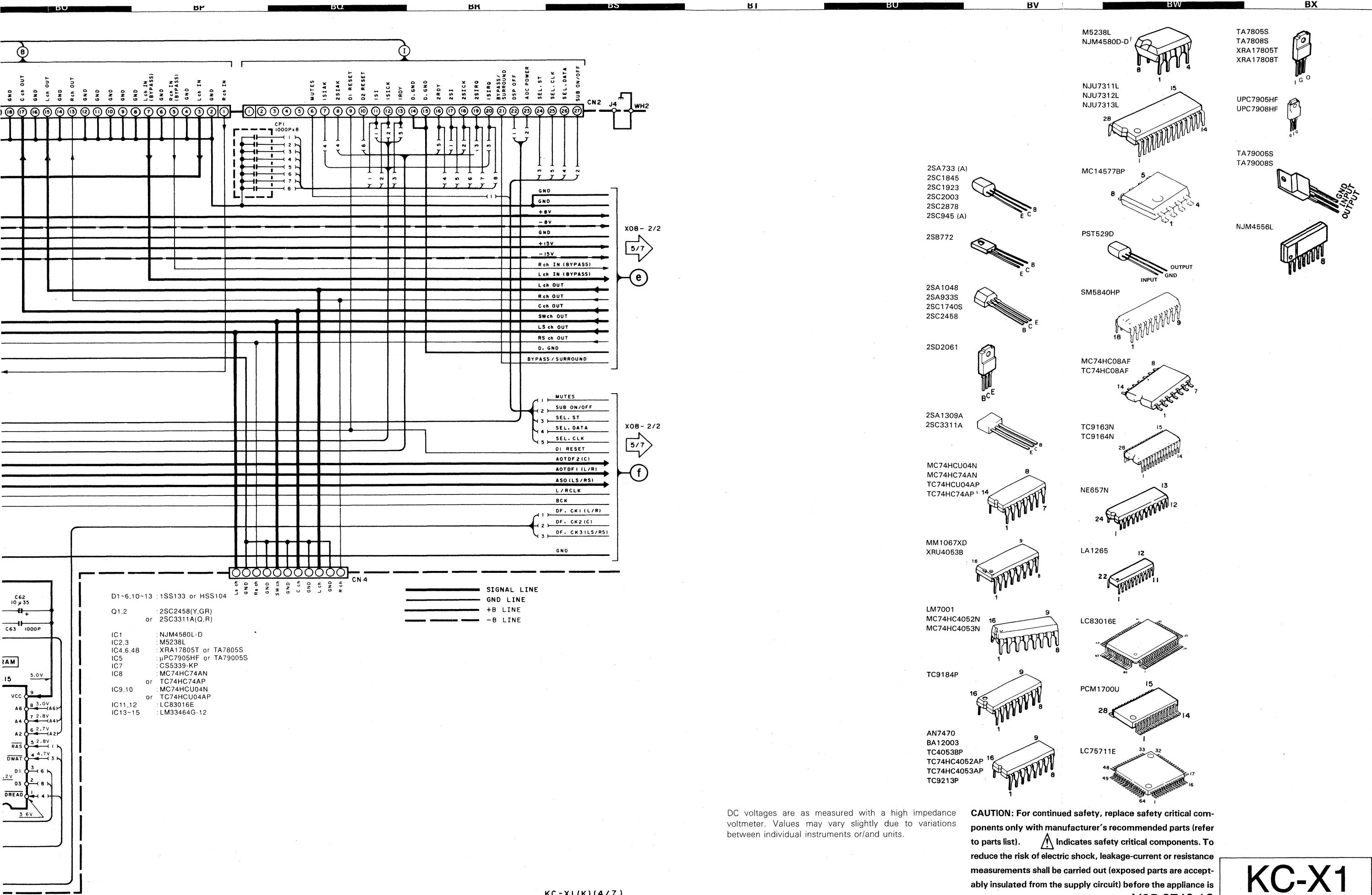


DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

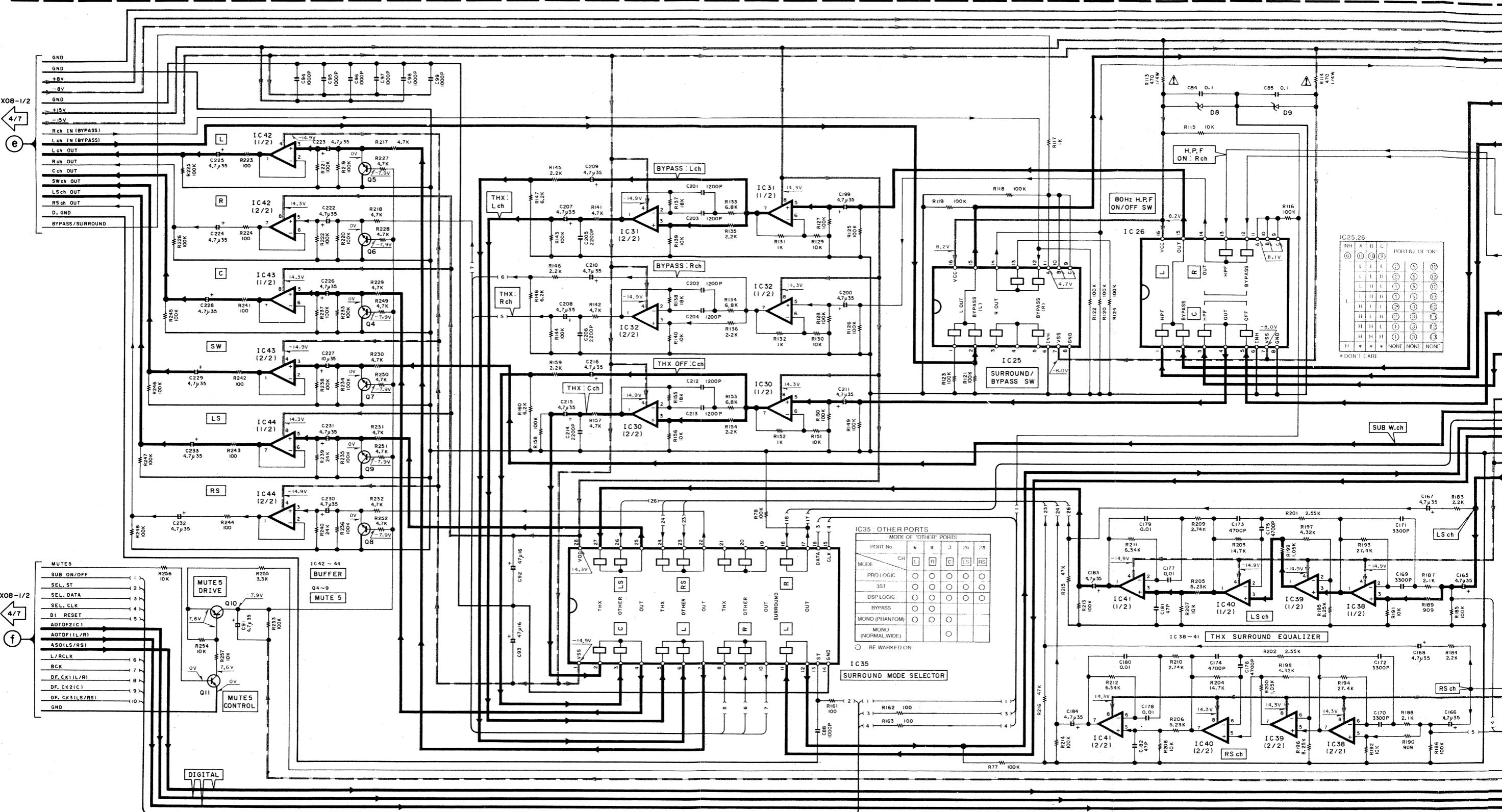
CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



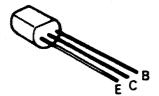




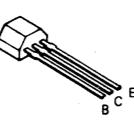
PRE AMPLIFIER UNIT (X08-2570-10) (2/2)



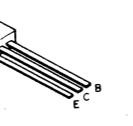
2SA733 (A)
2SC1845
2SC1923
2SC2003
2SC2878
2SC945 (A)



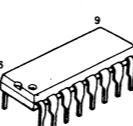
2SA1048
2SA933S
2SC1740S
2SC2458



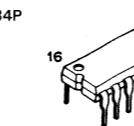
2SA1309A
2SC3311A



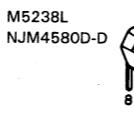
IM1067XD
RU4053B



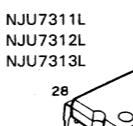
TC9184



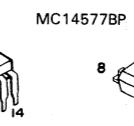
9



A small, rectangular component with a thin black border and a slightly irregular shape, possibly a metal clip or part of a circuit board.



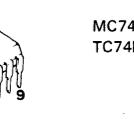
15



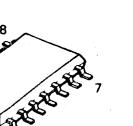
5



Fig. 1



CO8AF
08AF
8
S.S.



CH

CI

CJ

CK

CL

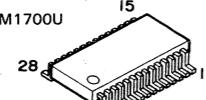
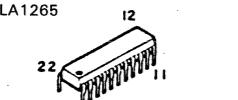
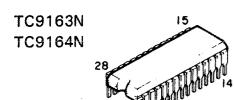
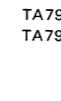
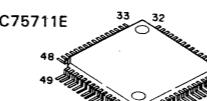
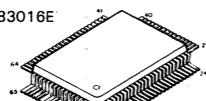
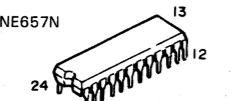
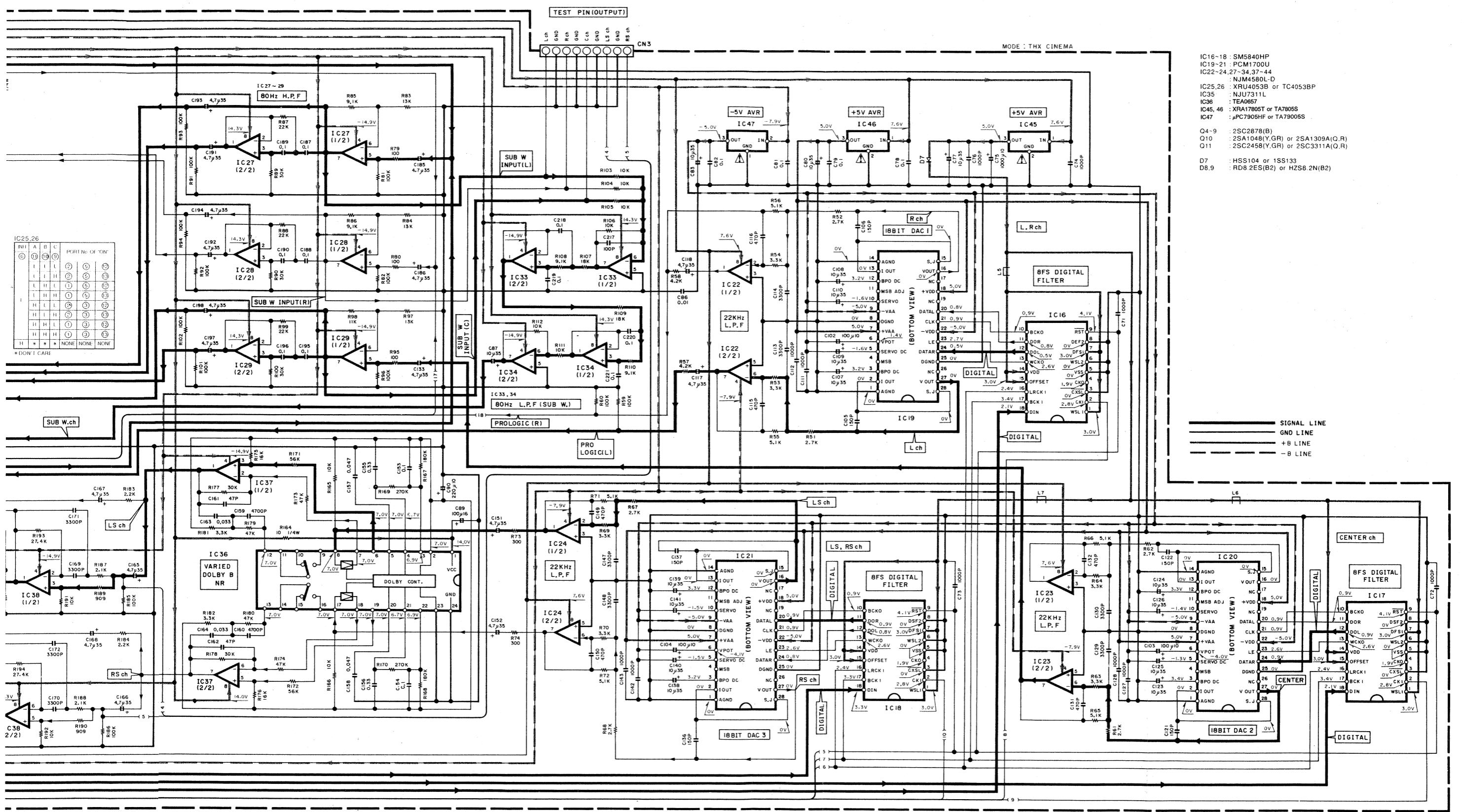
CM

CN

CU

CP

CU



DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).

Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

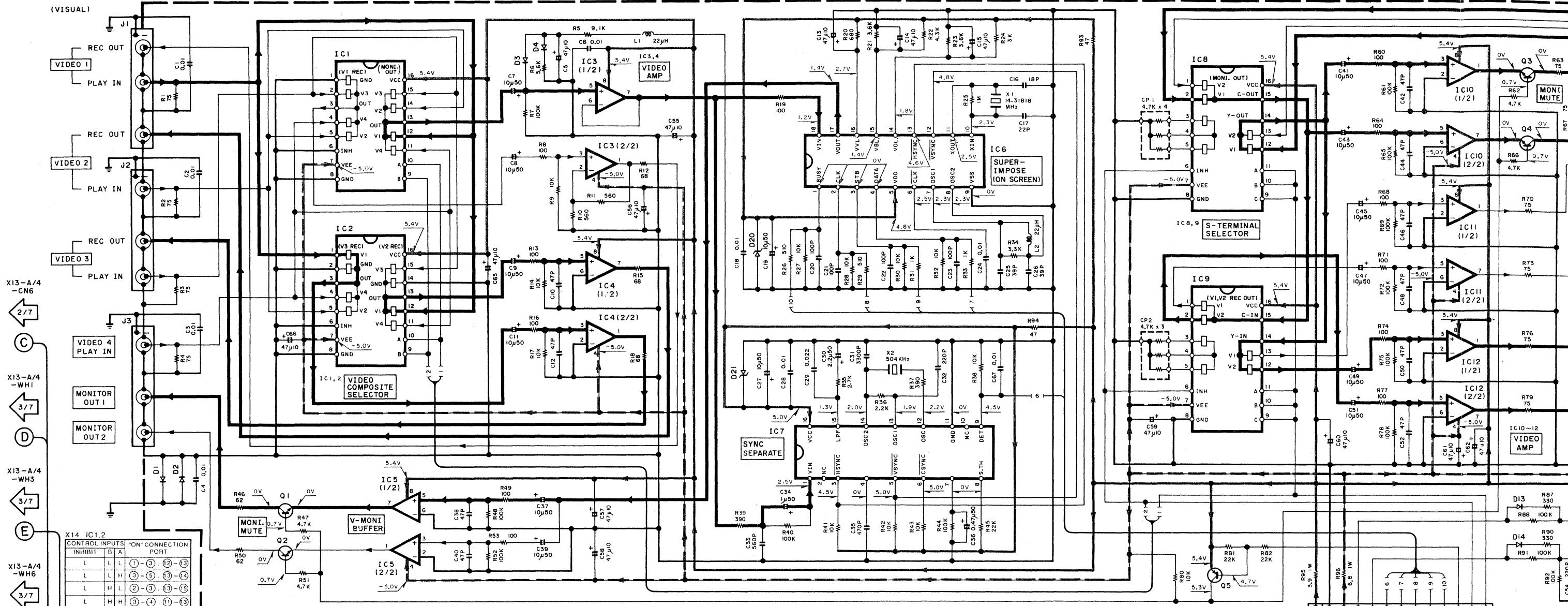
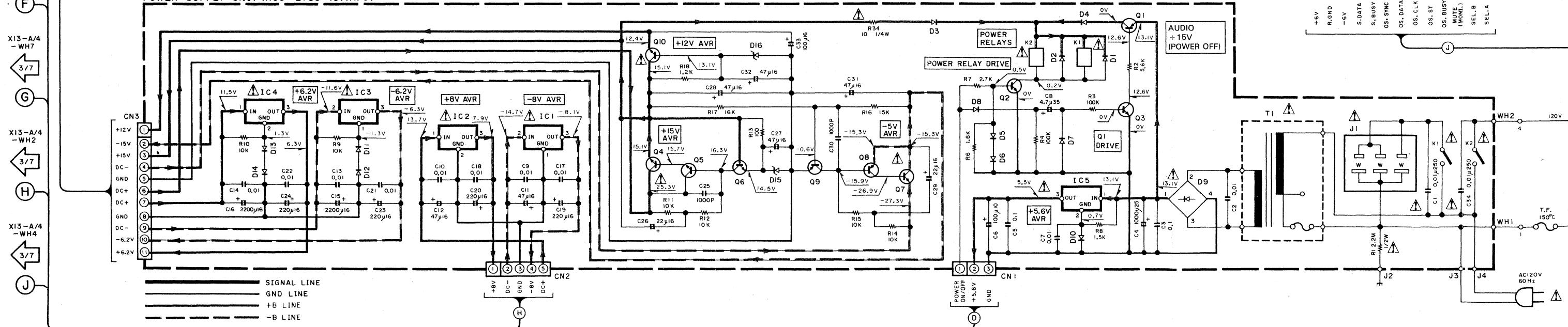
Y05-2740-10

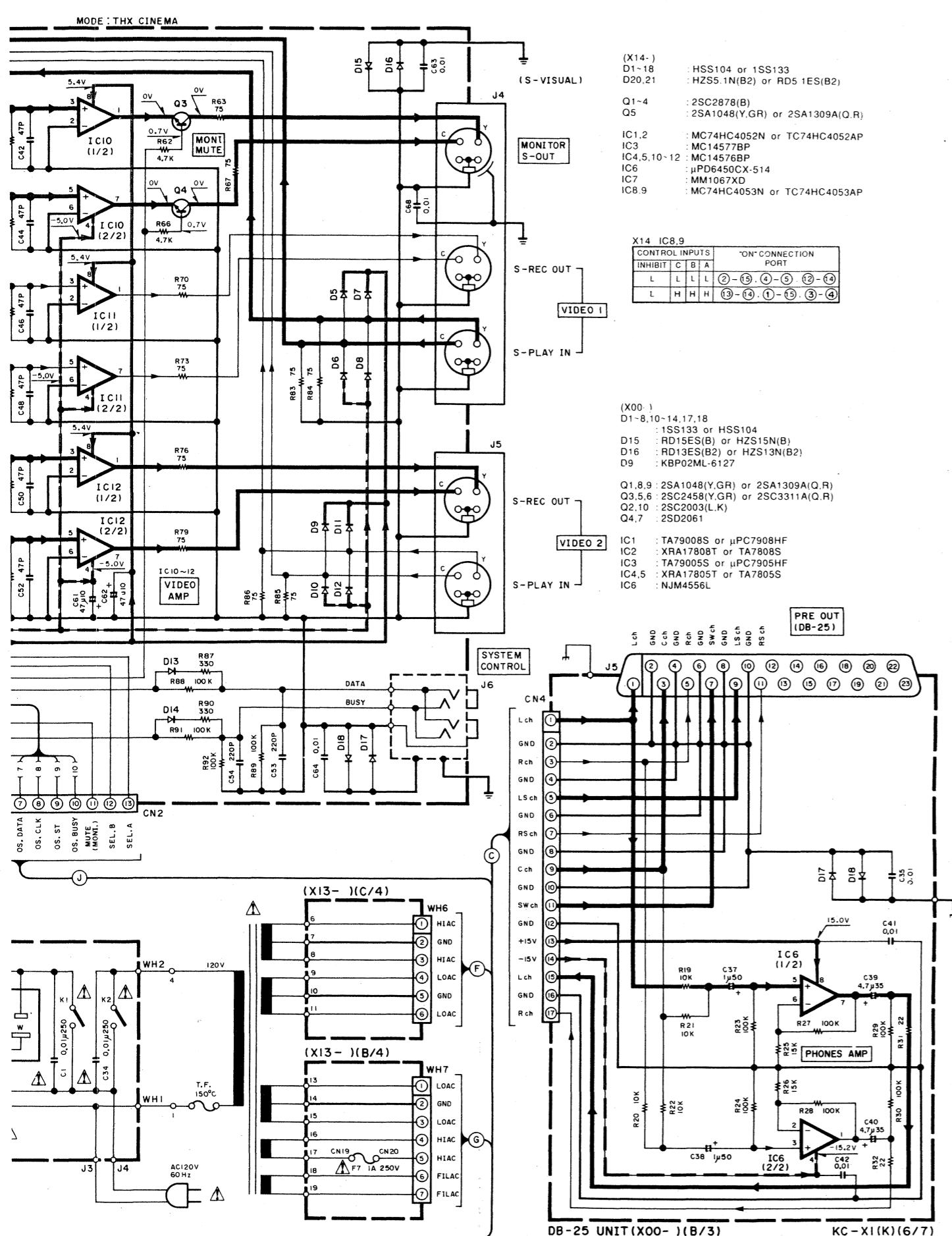
KC-X1

KENWOOD

VIDEO CONTROL UNIT (X14-3700-10)(C/3)

MODE : THX CINEMA

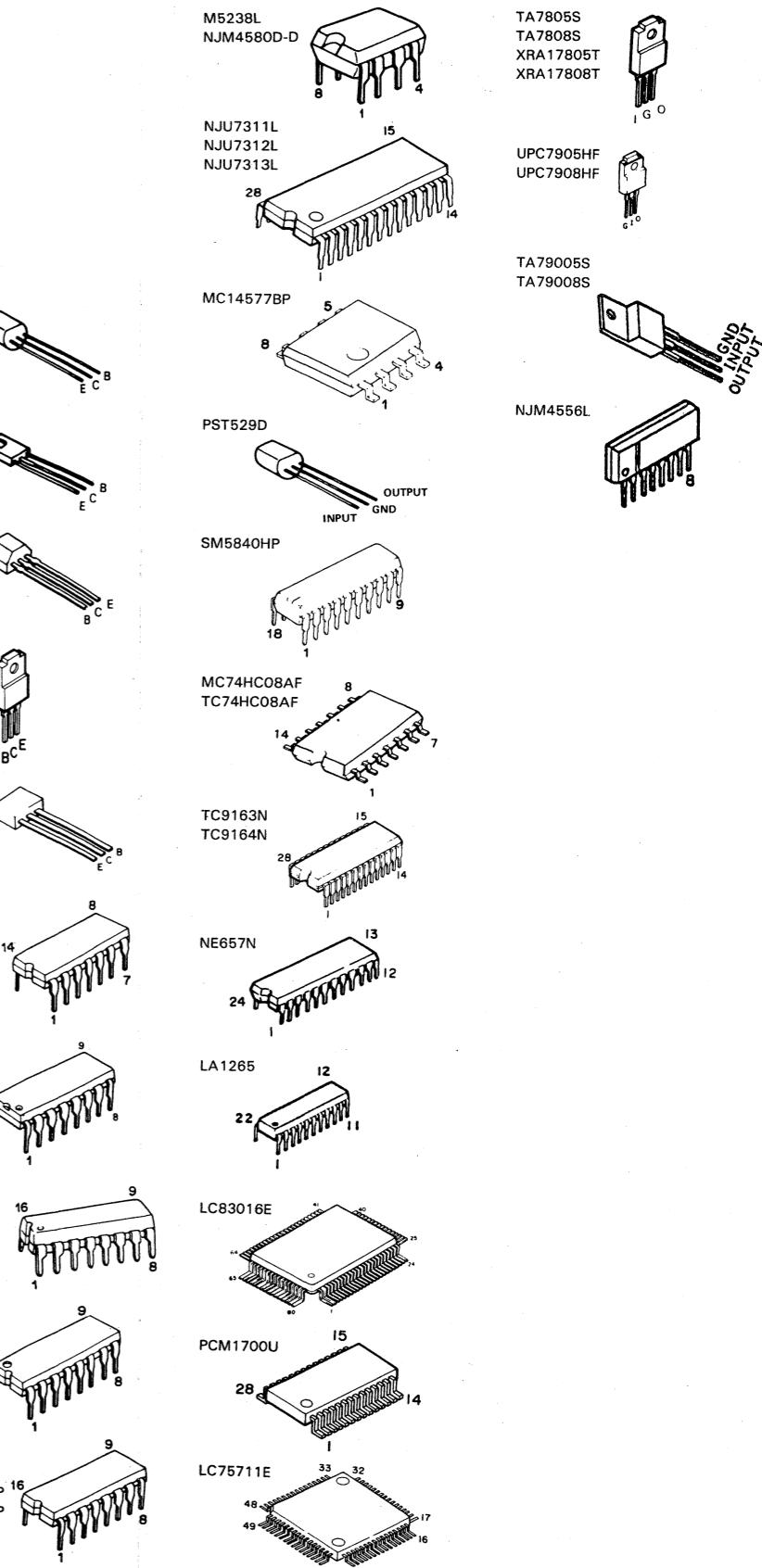

POWER SUPPLY UNIT (X00-2760-10)(A/3)




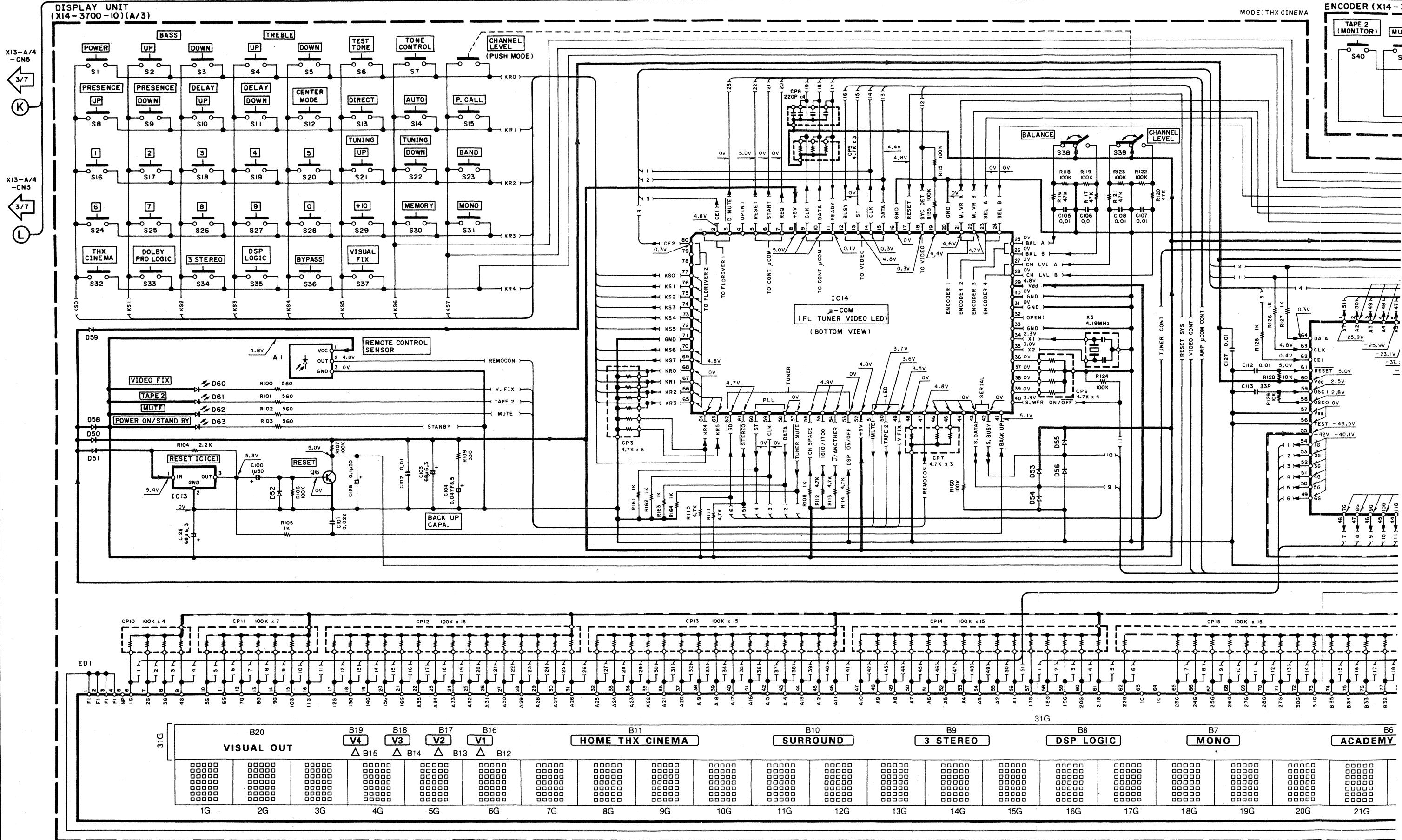
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

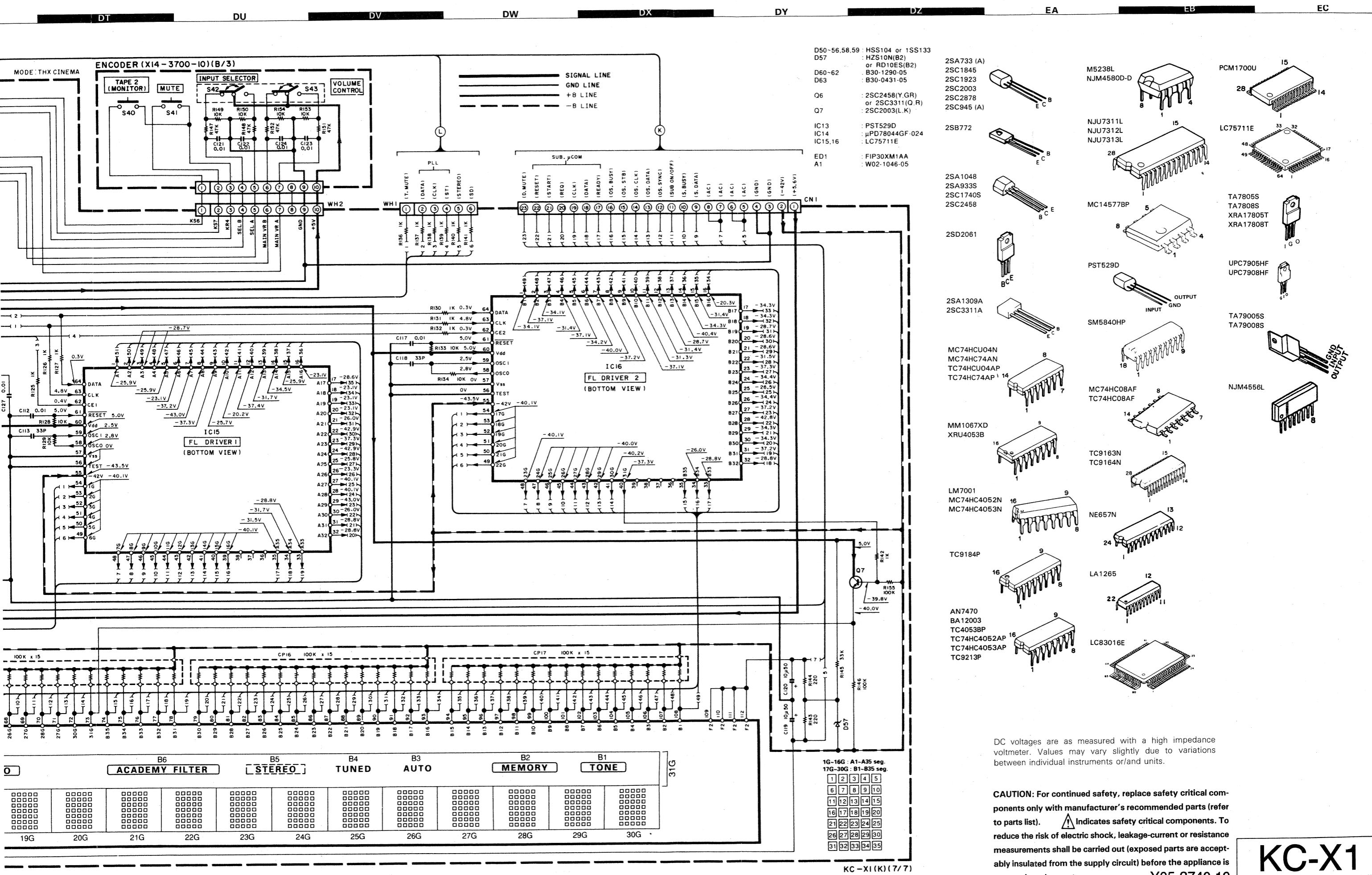
64

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



KC-X1
KENWOOD



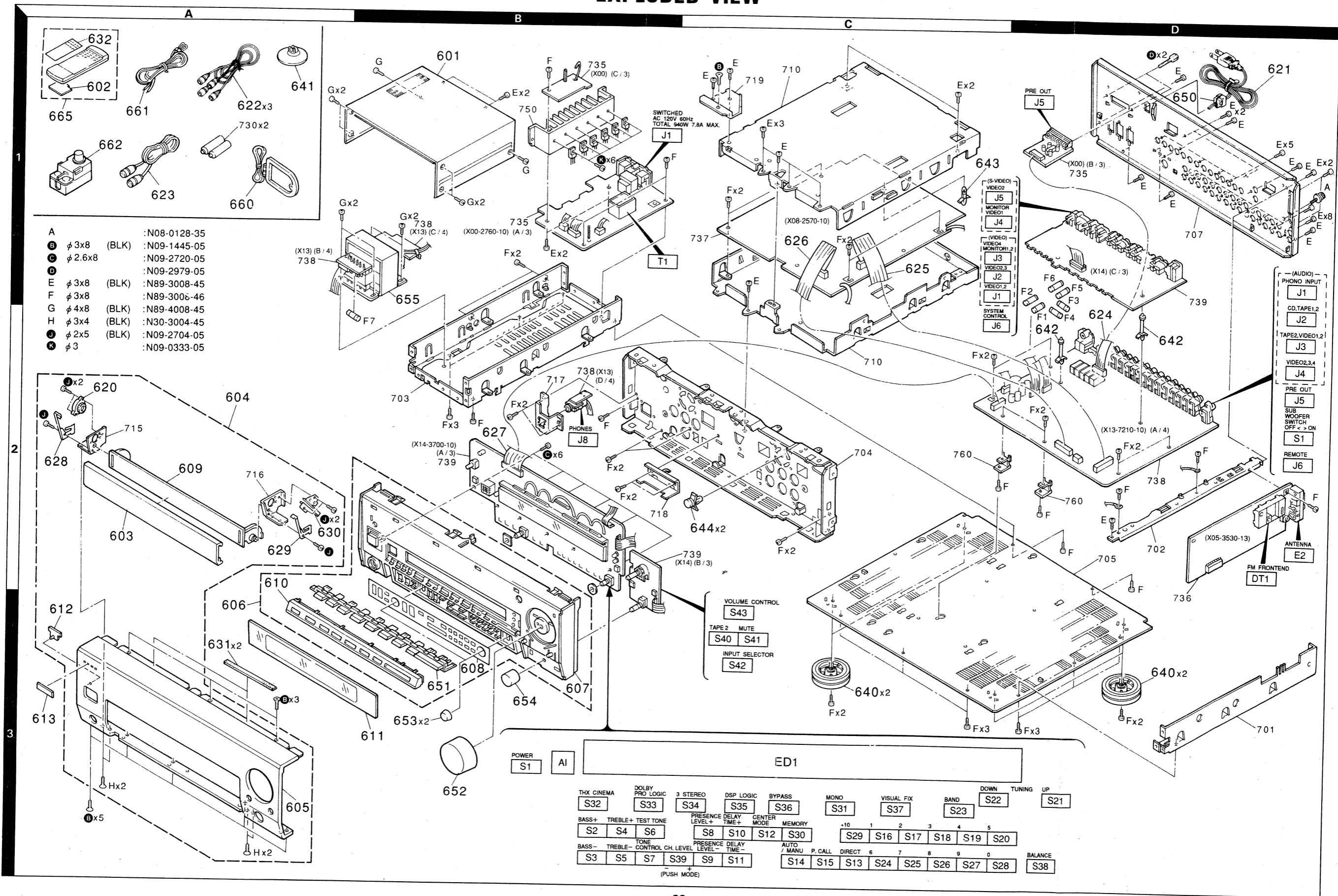


KC-X1

KENWOOD

KC-X1 KC-X1

EXPLODED VIEW



PARTS LIST

10

Ref. No.	参照番号	Address	New Parts 位新	部品番号	Description	部品名／規格	Desig-nation 仕様	Desig-nation 仕様	Desig-nation 仕様
Ref. No.	参照番号	Address	New Parts 位新	部品番号	部品名	部品番号	部品番号	部品番号	部品番号
C113				C91-0749-05	CERAMIC	220PF	K	DIODE	HSS104
C119				CE0KWW4R7M	CERAMIC	4.7UF	35WV	DIODE	ISS133
C122				C91-0749-05	CERAMIC	0.01UF	K	ZENER DIODE	HSS8-2N(B2)
C124				C91-0749-05	CERAMIC	0.01UF	K	ZENER DIODE	R08-2ES(B2)
C150-157				CK45FFH103Z	CERAMIC	0.010UF	Z	ZENER DIODE	HSS104
C158-159				CEOEWIC222M	ELECTRO	2200UF	25WV	DIODE	ISS133
C160-161				CEOEWIC102M	ELECTRO	2200UF	16WV	IC(CANALOG SWITCH)	NATU7312L
C162				CK45FFH103Z	ELECTRO	1000UF	6.3WV	IC(BILATERAL SWITCH)	TC9165N
C163				CEOEWIJ147M	ELECTRO	4.7UF	6.3WV	IC(CANALOG SWITCH)	NU7313L
C164				CEOEWIJ101M	ELECTRO	100UF	6.3WV	IC(16CH BILATERAL SELECTOR SW)	TC9164N
C165				CEOEWUJ221M	ELECTRO	100UF	6.3WV	IC(OP AMP X2)	NJM4580L-D
C166				CK45FFH103Z	ELECTRO	220UF	6.3WV	IC(2CH ELECTRONIC VOLUME)	TC9211P
C167				CEOEWUJ101M	ELECTRO	0.010UF	6.3WV	IC(OP AMP X2)	NJM4580L-D
C168				CEOEWKWA101M	ELECTRO	100UF	10WV	IC(2CH ELECTRONIC VOLUME)	TC9213P
J1			*	E63-0100-05	PHONE JACK (PHONE INPUT)	(250V 1A)		IC(OP AMP X2)	NJM4580L-D
J2	-4	2D	*	E63-0075-05	PHONE JACK (CD, TAPE, VIDEO)	(250V 1.25A)		IC(2CH ELECTRONIC VOLUME)	TC9213P
J5	2D		*	E63-0074-05	PHONE JACK (PREOUT)	(250V 1A)		IC(MICROPROCESSOR)	NJM4580L-D
J6	2D		*	E06-0806-05	CYLINDRICAL RECEPTACLE (REMOTE)			IC(TRANSISTOR ARRAY)	BA12003
J8	2B		*	E11-0208-05	PHONE JACK (PHONES)			IC(GATE)	NJM4580L-D
P1	-4		*	F04-1026-05	FUSE (UL)	(250V 1A)		IC(ELECTRO TONE CONTROL)	TC9184P
P5	,6		*	F06-1122-05	FUSE (UL)	(250V 1.25A)		IC(OP AMP X2)	NJM4580L-D
P7			*	F04-1026-05	FUSE (UL)	(250V 1A)		IC(OP AMP X2)	IC10
CN7	-20			J13-0075-05	FUSE CLIP			IC(MICROPROCESSOR)	NJM4580L-D
X1				L78-0267-05	RESONATOR	(4.194MHZ)		IC(TRANSISTOR ARRAY)	BA12003
CP1				R90-0878-05	MULTI-COMP	10KX3	J	IC(AND GATE)	IC13
CP2				R90-0855-05	MULTI-COMP	100KX5	J	IC(AND GATE)	IC14
CP3				R90-0803-05	MULTI-COMP	100KX7	J	IC(AND GATE)	IC15
CP4				R90-0805-05	MULTI-COMP	10KX8	J	IC(AND GATE)	IC16
CP5			*	R90-0855-05	MULTI-COMP	10KX9	J	IC(AND GATE)	IC17
CP6				R90-0892-05	MULTI-COMP	100KKX10	J	IC(AND GATE)	IC18
CP7			*	R90-0855-05	MULTI-COMP	1.0KX12	J	IC(AND GATE)	IC19
CP8			*	R90-0907-05	MULTI-COMP	1.0KX13	J	IC(AND GATE)	IC27
CP9	,10		*	R90-0850-05	MULTI-COMP	100KKX3	J	IC(AND GATE)	Q1
A R267,268				RD14NB2E220J	RD	22	J	IC(AND GATE)	Q2
A R338,339				RS14KB3A2R7J	FL-PROOF RS	2.7	J	IC(AND GATE)	Q3
X1	-5	2D		S51-2089-05	MAGNETIC RELAY(PREOUT)			IC(AND GATE)	Q4
S1				S31-2094-05	SLIDE SWITCH(S. WOOFER ON/OFF)			IC(AND GATE)	Q5
D1	-10			HSS104	DIODE			IC(AND GATE)	Q6
D11				1SS133	ZENER DIODE			IC(AND GATE)	Q7
D12				H233-3N(B2)	ZENER DIODE			IC(AND GATE)	Q8
D13				RD3-3ES(B2)	ZENER DIODE			IC(AND GATE)	Q9
D13	,16			HSS104	ZENER DIODE			IC(AND GATE)	Q10
D15	,16			1SS133	ZENER DIODE			IC(AND GATE)	Q11
D17	-20			KB02ML-6127	ZENER DIODE			IC(AND GATE)	Q12
D21				HZ220N(B)	ZENER DIODE			IC(AND GATE)	Q13
D21				RD20ES(B)	ZENER DIODE			IC(AND GATE)	Q14
D22				H254N(B)	ZENER DIODE			IC(AND GATE)	Q15
D22				RD24ES(B)	ZENER DIODE			IC(AND GATE)	Q16
D23				HSS104	ZENER DIODE			IC(AND GATE)	Q17
D23				1SS133	ZENER DIODE			IC(AND GATE)	Q18
								IC(AND GATE)	Q19
								IC(AND GATE)	Q20

DISPLAY UNIT (X14-3700-10)

D60	-62			B30-1229-05	LED	LED(LN210PH)			
D63				B30-0-031-05					
C1	-4			Ck45FF1H103Z	CERAMIC	0.010UF	Z		
C5				C04K1A1A70M	CERAMIC	47UF	10WV		
C6				Ck45FF1H103Z	CERAMIC	0.010UF	50WV		
C7	-9			C04K1H100M	CERAMIC	10UF	47PF	J	
C1C				CC45FF1H1470J	CERAMIC	10UF	50WV		
C11				C04K1H100M	CERAMIC	47PF	10WV		
C12				Ck45FF1H1470J	CERAMIC	10UF	50WV		
C13	-15			C04K1A1A70M	CERAMIC	47UF	10WV		
C16				CC45FF1H180J	CERAMIC	18PF	10WV	J	

L:Scandinavia
T:England
Y:PX(Far East, Hawaii)
X:Australia
P:Canada
E:Europe
Y:AAFESE(Europe)
X:Australia
K:USA
P:Canada
Y:PX(Far East, Hawaii)
X:Australia
T:England
E:Europe
Y:AAFESE(Europe)
X:Australia
X:Other Areas

L:Scandinavia
Y:PX(Far East, Hawaii)
X:Australia
P:Canada
E:Europe
Y:AAFESE(Europe)
X:Australia
X:Other Areas

△ indicates safety critical components.

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnés dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

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PARTS LIST

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Parts without Parts No. are not supplied.
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Alle ohne Parts No. werden nicht geliefert.

Ref. No.	参照番号	Address	New Parts No.	Parts No.	Description	部品名 / 规格	Desti- nation	Re- marks
		位置	新	部品番号			仕	備考
C17			CC45FSL1H220J	CERAMIC	22PF	J		
C18			CK45FF1H103Z	ELECTRO	0.010UF	Z		
C19			CB04KWH1H100M	CERAMIC	10UF	50WV		
C20	-23		CC45FSL1H101J	CERAMIC	100PF	J		
C24			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C25	,26		CC45FSL1H390J	CERAMIC	39PF	J		
C27			CE04KWH1H100M	ELECTRO	10UF	50WV		
C28			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C29			CK45FF1H222Z	CERAMIC	0.022UF			
C30			CE04KWH1H22R2M	ELECTRO	2.20UF	50WV		
C31			CK45FBL1H332K	CERAMIC	3300PF	K		
C32			CK45FSL1H221J	CERAMIC	220PF	J		
C33			CK45FF1H561Z	CERAMIC	560PF	K		
C34			CE04KWH1H101M	ELECTRO	1.0UF	50WV		
C35			CK45FB1H1471K	CERAMIC	470PF	K		
C36			CE04KWH1H470M	ELECTRO	0.47UF	50WV		
C37			CC04KWH1H100M	ELECTRO	10UF	50WV		
C38			CC45FSL1H470J	CERAMIC	47PF	J		
C39			CE04KWH1H100M	ELECTRO	10UF	50WV		
C40			CC45FSL1H470J	CERAMIC	47PF	J		
C41			CE04KWH1H100M	ELECTRO	10UF	50WV		
C42			CC45FSL1H470J	CERAMIC	47PF	J		
C43			CE04KWH1H100M	ELECTRO	10UF	50WV		
C44			CC45FSL1H470J	CERAMIC	47PF	J		
C45			CE04KWH1H100M	ELECTRO	10UF	50WV		
C46			CC45FSL1H470J	CERAMIC	47PF	J		
C47			CE04KWH1H100M	ELECTRO	10UF	50WV		
C48			CC45FSL1H470J	CERAMIC	47PF	J		
C49			CE04KWH1H100M	ELECTRO	10UF	50WV		
C50			CC45FSL1H470J	CERAMIC	47PF	J		
C51			CE04KWH1H100M	ELECTRO	10UF	50WV		
C52			CC45FSL1H470J	CERAMIC	47PF	J		
C53	,54		CC45FSL1H221J	CERAMIC	220PF	J		
C55	-62		CE04KWH1H101M	ELECTRO	1.0UF	50WV		
C56	,64		CK45FF1H103Z	CERAMIC	0.010UF	Z		
C65	,66		CE04KWH1H470M	ELECTRO	4.7UF	10WV		
C67	,68		CC45FSL1H470J	CERAMIC	47PF	J		
C100			CC04KWH1H101M	ELECTRO	1.0UF	50WV		
C101			C91-0085-05	CERAMIC	0.022UF	N		
C102			CK45FSL1H103Z	CERAMIC	0.010UF	Z		
C103			C90-3213-05	ELECTRO	6.8UF	6.3WV		
C104			C90-1822-05	BUPACK	0.047F	5.5WV		
C105	-108		C91-0769-05	CERAMIC	0.01UF	K		
C112			C91-0769-05	CERAMIC	0.010UF	Z		
C113			CK45FSL1H330J	CERAMIC	33PF	J		
C117			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C118			CC45FSL1H330J	CERAMIC	33PF	J		
C119	,120		CE04KWH1H100M	ELECTRO	1.0UF	50WV		
C122	-124		C91-0769-05	CERAMIC	0.01UF	K		
C126			C90-3248-05	ELECTRO	0.1UF	50WV		
C127			CK45FF1H103Z	CERAMIC	0.010UF	Z		
C128			C90-3213-05	ELECTRO	6.8UF	6.3WV		
J1	-3	1C	E13-0313-05	PHONO JACK(VIDE01-4 MONITOR)				
J4		1C	E06-0409-05	CYLINDRICAL RECEPTACLE(S-OUT)				

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SPECIFICATIONS

AUDIO section

Total harmonic distortion	
.....	0.002 % (20 Hz- 20 kHz, 1.2 V)
.....	0.002 % (1 kHz, 1.2 V)
Frequency response	
LINE (CD, TAPE1, 2, VIDEO1)	15 Hz- 100 kHz, + 0 dB, - 3 dB
PHONO "RIAA" response	20 Hz - 20 kHz, ± 0.5 dB
Signal to noise ratio (IHF'66)	
PHONO (MM)	78 dB
LINE (CD, TAPE 1~2, VIDEO 1~4)	100 dB
Input sensitivity/impedance	
PHONO (MM)	2.5 mV/47 kΩ
LINE (CD, TAPE 1~2, VIDEO 1~4)	200 mV/47 kΩ

Tone control	
BASS	± 8 dB (at 100 Hz)
TREBLE	± 8 dB (at 10 kHz)
Output level/impedance	
Front channel preout	1.2 V/390 Ω
Sub woofer, center channel preout	1.2 V/390 Ω
Surround channel preout.....	1.2 V/390 Ω

VIDEO section

Television format	NTSC
Input level/impedance	
VIDEO (Composite)	1 Vp-p/75 Ω
Input (VIDEO 1, 2, 3, 4)	
S-VIDEO (Luminance signal)	1 Vp-p/75 Ω
(Chrominance signal)	0.286 Vp-p/75 Ω
Input (VIDEO 1, 2)	
VIDEO (Composite)	1 Vp-p/75 Ω
output (VIDEO 1, 2, 3, MONITOR OUT 1, 2)	
S-VIDEO (Luminance signal)	1 Vp-p/75 Ω
(Chrominance signal)	0.286 Vp-p/75 Ω
output (VIDEO 1, 2, MONITOR OUT)	

FM tuner section

Tuning frequency range	87.5 MHz-108 MHz
Usable sensitivity (MONO at 75 Ω)	0.95 μV/10.8 dBf
Total harmonic distortion (at 1 kHz)	
MONO	0.1 % (65 dBf input)
STEREO	0.2 % (65 dBf input)
Signal to noise ratio (at 1 kHz)	
MONO	80 dB (65 dBf input)
STEREO	74 dB (65 dBf input)
Stereo separation (at 1 kHz)	
1 kHz	50 dB
Capture ratio (WIDE)	1.0 dB
Selectivity (± 400 kHz)	53 dB

AM tuner section

Tuning frequency range	
10 kHz step	530 kHz - 1,700 kHz
Usable sensitivity	10 μV / (400 μV/m)
Signal to noise ratio (at 30% mod. 1mV input)	50 dB
Total harmonic distortion	0.4 %
GENERAL	
Power consumption 50 W
AC outlets	
SWITCHED	3 (940 W max.)
Dimensions	W : 440 mm (17-5/16") H : 161.5 mm (6-3/8") D : 380 mm (14-15/16")
Weight (Net)	10.5 kg (23.1lb)

KC-X1

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Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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